(2)

AFWAL-TR-88-4248

DAMPING PROPERTIES OF VARIOUS MATERIALS

Michael L. Drake

University of Dayton
Research Institute
300 College Park Avenue
Dayton, OH 45469-0001

March 1989

Final Report for Period September 1985 - October 1988

MATERIALS LABORATORY
AIR FORCE WRIGHT AERONAUTICAL LABORATORIES
AIR FORCE SYSTEMS COMMAND
WRIGHT-PATTERSON AIR FORCE BASE, OHIO 45433

NOTICE

When government drawings, specifications, or other data are used for any purpose other than in connection with a definitely government-related procurement, the United States Government incurs no responsibility or any obligation whatsoever. The fact that the government may have formulated or in any way supplied the said drawings, specifications, or other data, is not be be regarded by implication, or otherwise in any manner construed, as licensing the holder, or any other person or corporation; or as conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

This report has been reviewed by the Office of Public Affairs (ASD/PA) and is releasable to the National Technical Information Service (NTIS). At NTIS, it will be available to the general public, including foreign nations.

This technical report has been reviewed and is approved for publication.

DAVID I.G. JONES
Project Engineer
Metals Behavior Branch

ALLAN W. GUNDERSON
Technical Manager
Metals Behavior Branch

FOR THE COMMANDER

JOHN P. HENDERSON, Chief
Metals Behavior Branch

If your address has changed, if you wish to be removed from our mailing list, or if the addressee is no longer employed by your organization, please notify WRDC/MLLN, Wright-Patterson AFB OH 45433-6533 to help us maintain a current mailing list.

Copies of this report should not be returned unless return is required by security considerations, contractual obligations, or notice on a specific document.

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE

REPORT DOCUMENTATION PAGE

1a. REPORT SECURITY CLASSIFICATION: Unclassified	1b. RESTRICTIVE MARKINGS: None
2a. SECURITY CLASSIFICATION AUTHORITY	3. DISTRIBUTION/AVAILABILITY OF REPORT: Approved for public release; distribution is unlimited.
2b. DECLASSIFICATION/DOWNGRADING SCHEDULE	
4. PERFORMING ORGANIZATION REPORT NUMBER(S): UDR-TR-88-122	5. MONITORING ORGANIZATION REPORT NUMBER(S): AFWAL-TR-88-4248
6a. NAME OF PERFORMING ORGANIZATION: University of Dayton Research Institute; 6b. OFFICE SYMBOL (If applicable):	7a. NAME OF MONITORING ORGANIZATION: Air Force Wright Aeronautical Laboratories Materials Laboratory (AFWAL/MLLN)
6c. ADDRESS (City, State and ZIP Code): 300 College Park Avenue Dayton, OH 45469	7b. ADDRESS (City, State and ZIP Code): Wright-Patterson AFB OH 45433-6533
8a. NAME OF FUNDING/SPONSORING ORGANIZATION; 8b. OFFICE SYMBOL (If applicable):	9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER: F33615-85-C-5040
8c. ADDRESS (City, State and ZIP Code):	10. SOURCE OF FUNDING NOS.

PROGRAM ELEMENT NO.	PROJECT NO.	TASK NO.	WORK UNIT NO.
62102F	2418	04	42

11. TITLE (Include Security Classification): Damping Properties of Various Materials

12. PERSONAL AUTHOR(S): Michael L. Drake

13a. TYPE OF REPORT	13b. TIME COVERED	14. DATE OF REPORT (Yr., Mo., Day)	15. PAGE COUNT
Final	FROM Sept 85 TO Oct 88	March 1989	291

16. SUPPLEMENTARY NOTATION

17. COSATI CODES			18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)
FIELD	GROUP	SUB. GR.	Polymers, Enamels, Structural Adhesives, Damping, Complex Modulus, Dynamic Modulus, ASTM E-756
11	02		
11	09, 10		

19. ABSTRACT (Continue on reverse if necessary and identify by block number)

Complex modulus data is presented for a total of 44 materials. The material types include polymers, enamels, and structural adhesives. The complex modulus data was obtained using the ASTM E-756 standard test.

to p. 1

20. DISTRIBUTION/AVAILABILITY OF ABSTRACT	21. ABSTRACT SECURITY CLASSIFICATION
UNCLASSIFIED/UNLIMITED ☒ SAME AS RPT. ☐ DTIC USERS ☐	UNCLASSIFIED

22a. NAME OF RESPONSIBLE INDIVIDUAL	22b. TELEPHONE NUMBER (Include Area Code)	22c. OFFICE SYMBOL
D. I. G. Jones	513-255-1355	AFWAL/MLLN

DD FORM 1473, 83 APR EDITION OF 1 JAN 73 IS OBSOLETE.

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE

TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

LIST OF TABLES

FOREWORD

This report presents all the material property tests conducted by the University of Dayton in completing the contractual requirements for Air Force Contract Number F33615-85-C-5040 which was funded by AFWAL/MLLN. Dr. D. I. G. Jones was the Technical Contract Monitor. The author wishes to acknowledge the support of Tim Montavon, Patrick Sparto and Josephine Glover in completing the efforts to obtain the data and prepare it for publication.

SECTION 1
INTRODUCTION

This report presents the complex modulus properties for various materials. All of the materials were tested and the data reduced in accordance with ASTM E756-83. The report is divided into six sections which are:

- Section 1 - Introduction
  A basic summary of information contained in this report.
- Section 2 - Damping Polymers
  The test results on the damping polymers evaluated.
- Section 3 - Structural Adhesives
  The test results on the structural adhesives evaluated.
- Section 4 - Enamels
  The test results on the enamels evaluated.
- Section 5 - How to Read a Nomogram
  The method of interpreting a nomogram.
- Section 6 - Manufacturers
  The addresses for the manufacturers of all the materials evaluated.

The complex modulus data set for each material given in this report contains the following information:

- A full page reduced frequency nomogram (FRN), (see Figure 1).
- A half page RFN with a list of the modulus, loss factor, and a_T equations and equation parameters used to fit the data, (see Figure 2).
- A plot of test frequency versus test temperature, (see Figure 3).
- A plot of material modulus versus test temperature, (see Figure 4).

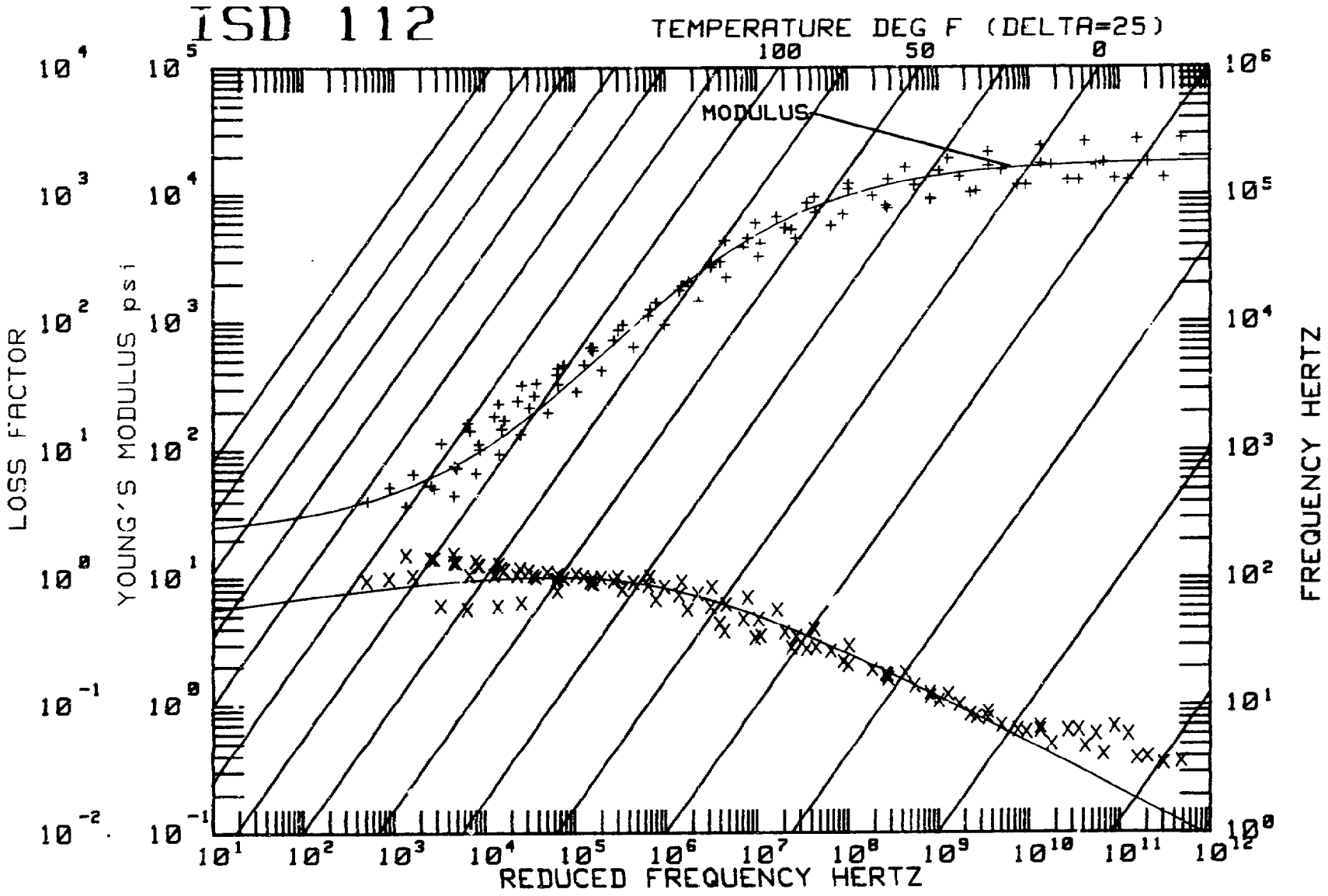
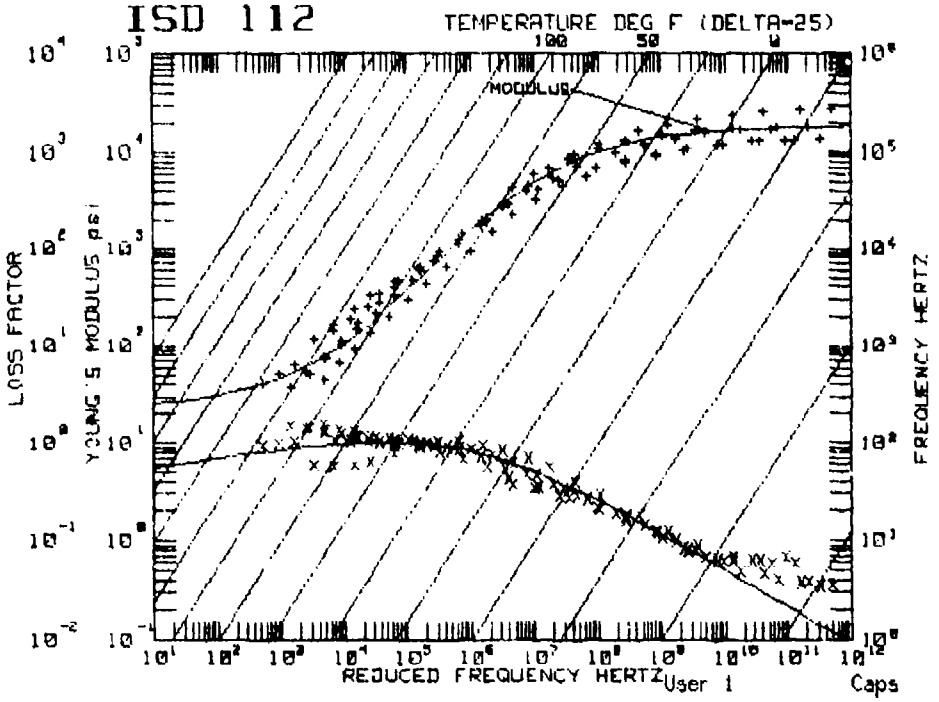


Figure 1. Typical Reduced Frequency Nomogram.



MATERIAL CODE: ED0425
MATERIAL: ISD 112

UNITS ARE ENGLISH

LOG(M)=LOG(ML)+(2LOG(MROM/ML))/(1+(FQROM/FR)^SLOPE)

TZERO	FQROM	MROM	SLOPE	ML
150.0	2.465E+05	6.450E+02	0.372	2.194E+01

LOG(ETA)=LOG(ETFROL)+((SH+SL)A+(SL-SH)(1-SQR(1+A^2)))C/2

TZERO	ETFROL	SL	SH	FROL	C
150.0	.870	.115	-.385	7.340E+05	1.800

LOG(FR)=LOG(F)-12(T-T0)/(525+T-T0)
A=(LOG(FR)-LOG(FROL))/C

Figure 2. Typical Curve Fit Equations and Parameter List.

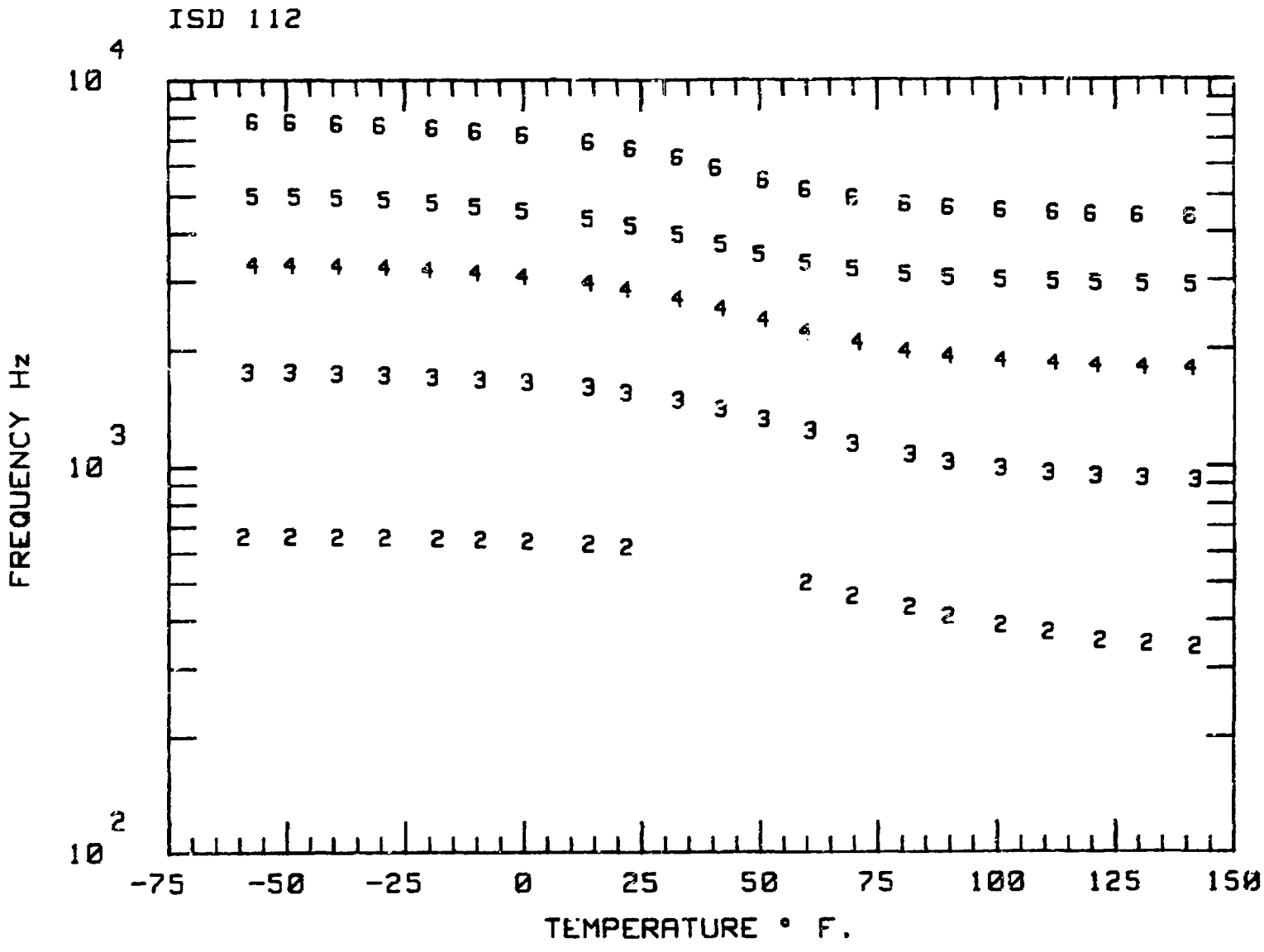


Figure 3. Typical Frequency versus Temperature Plot.
(Number Indicates Beam Resonant Mode Number).

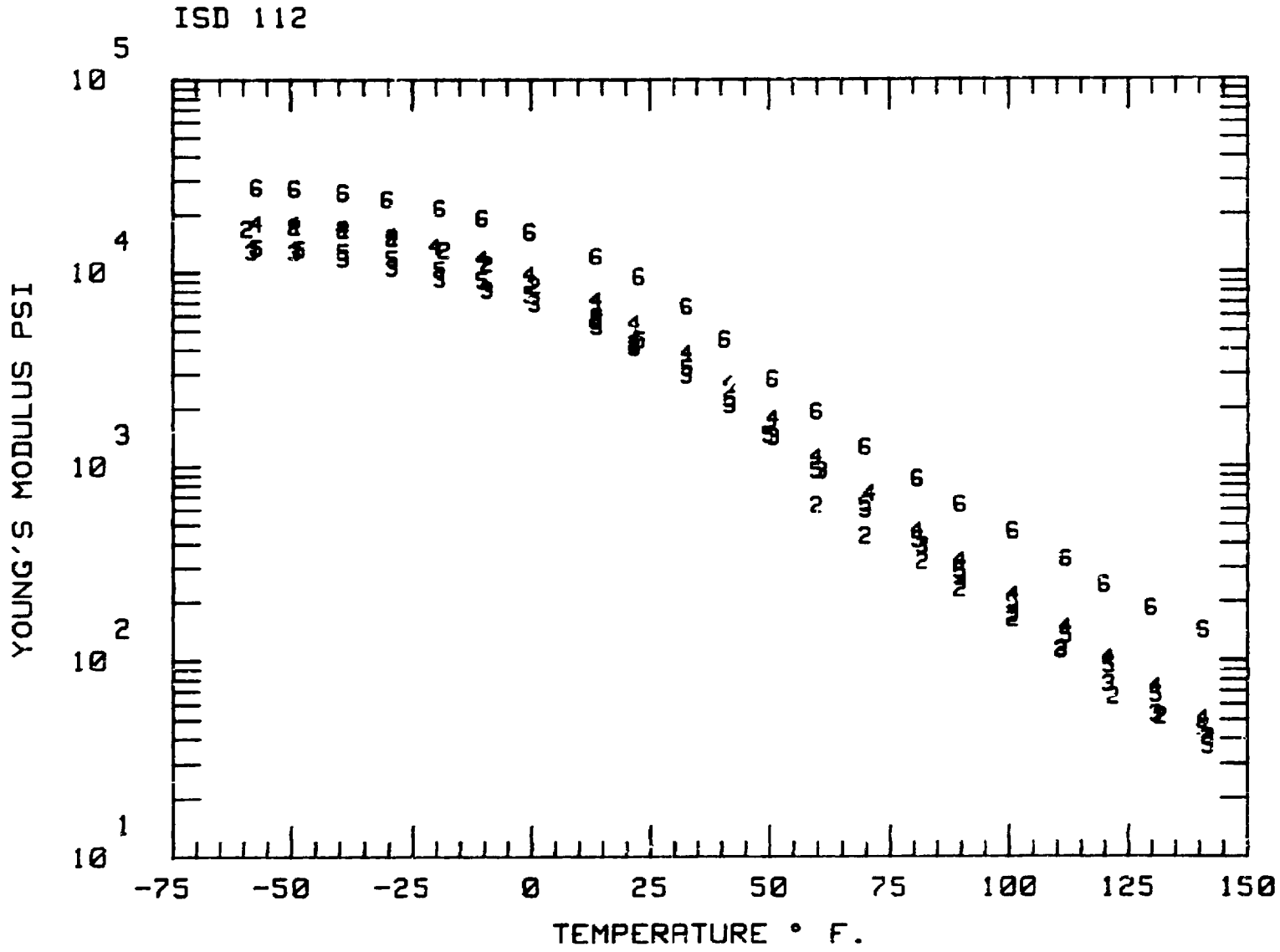


Figure 4. Typical Modulus versus Temperature Plot.
(Number Indicates Beam Resonant Mode Number).

- A plot of test (system) loss factor versus test temperature (see Figure 5).
- A plot of material loss factor versus test temperature (see Figure 6).
- A plot of material loss factor versus material modulus (see Figure 7).
- A listing of all the test parameters including both the original test data and the reduced material properties (see Figure 8).

The information included in each material data set is totally complete so that the reader could recalculate the material properties from the test data or regenerate the nomogram plot using the material properties.

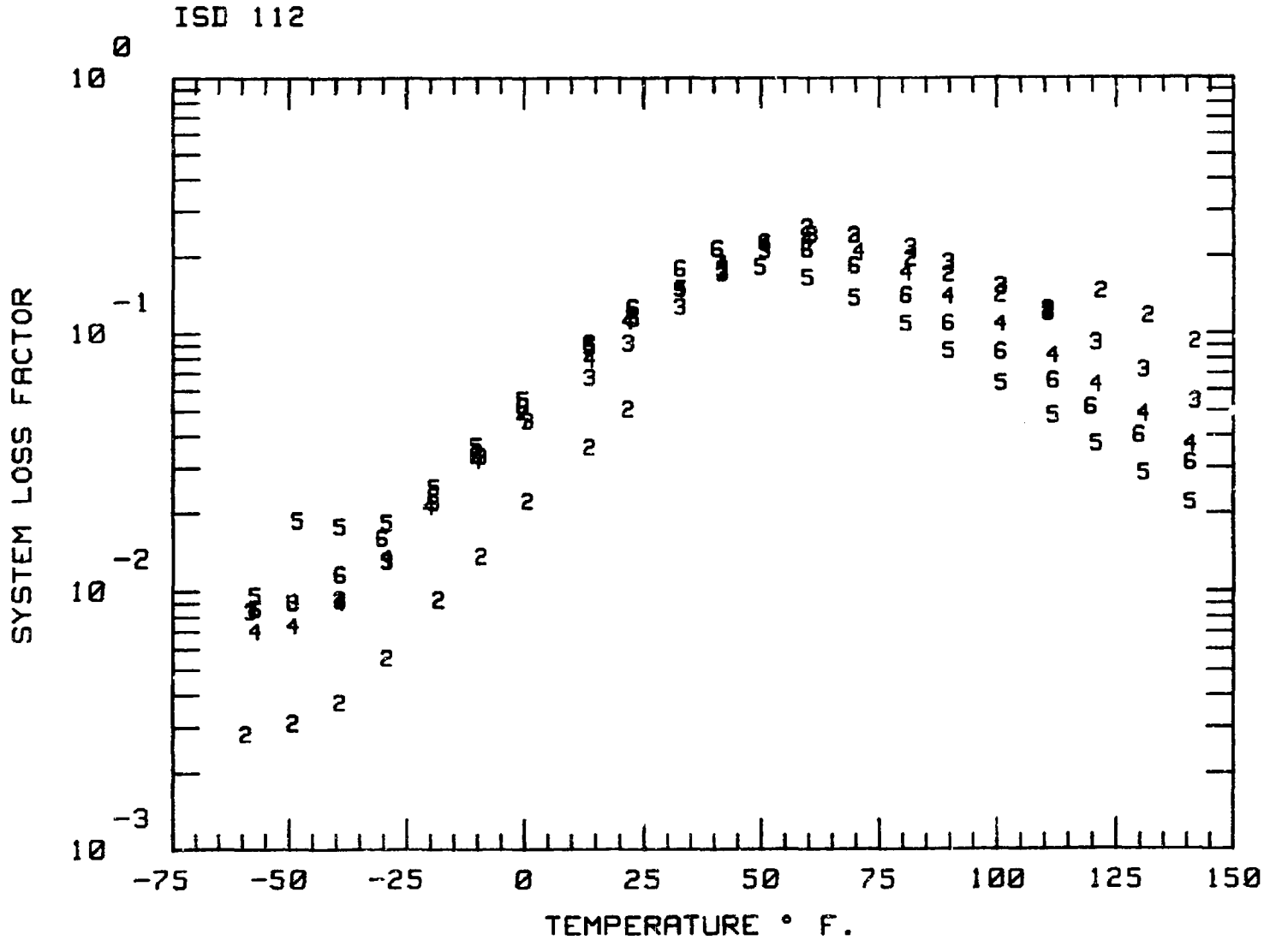


Figure 5. Typical System Loss Factor versus Temperature Plot. (Number Indicates Beam Resonant Mode Number).

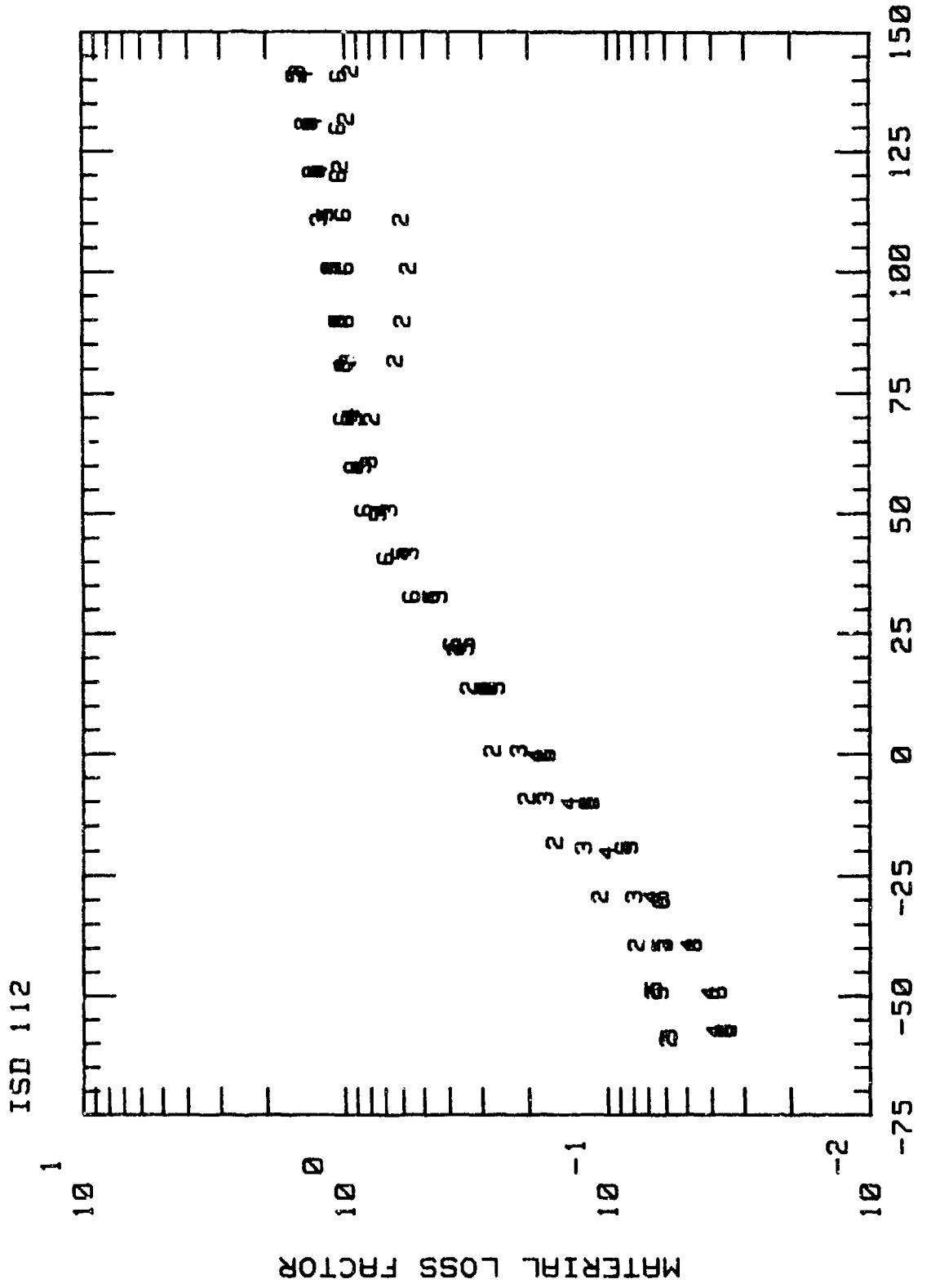


Figure 6. Typical Material Loss Factor versus Temperature Plot. (Number Indicates Beam Resonant Mode Number).

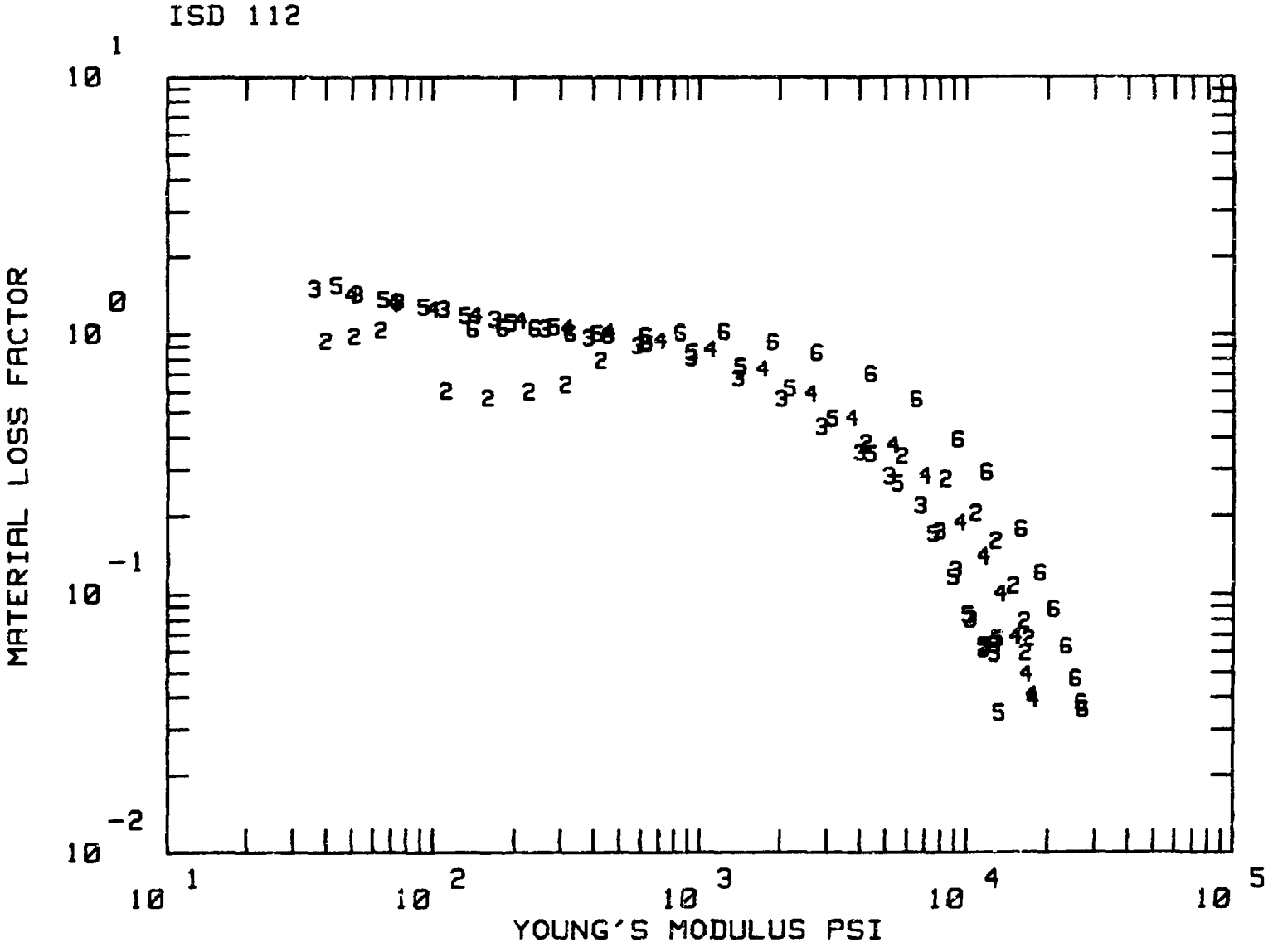


Figure 7. Typical Material Loss Factor versus Modulus Plot. (Number Indicates Beam Resonant Mode Number.)

MATERIAL CODE: ED0425
MATERIAL: ISD 112-A
MANUFACTURER: UDRI
REMARKS: 3M MATL. ON AL BEAMS
DATE: 4 Mar 1988
ENTERED BY: SEO
BEAM MATERIAL: STAINLESS STEEL
BEAM NUMBER: AL-080-G & AL-080-E
BEAM TYPE: SANDWICH BEAM
BEAM LENGTH: 7 in
BEAM THICKNESS: .07882 in
BEAM DENSITY: .1 lb/cu in
DAMPING MATERIAL THICKNESS: .002 in
DAMPING MATERIAL DENSITY: .035 lb/cu in

INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	YOUNG'S MODULUS PSI	MATERIAL LOSS FACTOR
1	-59	2	331.5	657.7	.002797	1.6686E+04	.058660
2	-58	3	928.2	1738.5	.008329	1.2769E+04	.058245
3	-57	4	1803.9	3291.6	.006974	1.7816E+04	.038761
4	-57	5	2979.2	4963.1	.009543	1.3287E+04	.034358
5	-57	6	4452.4	7728.4	.008521	2.7332E+04	.035599
6	-49	2	331.0	657.2	.003088	1.7181E+04	.066768
7	-49	3	926.9	1736.1	.009015	1.2713E+04	.062991
8	-49	4	1801.8	3286.4	.007323	1.7692E+04	.040583
9	-49	6	4446.3	7707.9	.009064	2.6968E+04	.037659
10	-48	5	2975.1	4949.3	.018580	1.3095E+04	.066673
11	-39	2	330.5	655.6	.003710	1.6537E+04	.077796
12	-39	3	925.6	1722.6	.009224	1.1640E+04	.060525
13	-39	4	1799.1	3267.2	.009107	1.6811E+04	.048916
14	-39	5	2971.0	4924.7	.017647	1.2730E+04	.062662
15	-39	6	4438.6	7654.8	.011533	2.5742E+04	.046891
16	-30	6	4431.7	7568.8	.015905	2.3721E+04	.062761
17	-29	2	330.0	653.2	.005509	1.5039E+04	.106695
18	-29	3	924.2	1706.2	.012998	1.0456E+04	.079325
19	-29	4	1796.4	3234.7	.013372	1.5313E+04	.067886
20	-29	5	2966.4	4858.6	.018191	1.1675E+04	.062566
21	-20	4	1794.0	3191.4	.021107	1.3516E+04	.099781
22	-19	3	922.2	1686.2	.021942	9.1766E+03	.123456
23	-19	5	2961.9	4759.3	.025028	1.0223E+04	.082464
24	-19	6	4423.3	7454.4	.023231	2.1300E+04	.086847
25	-18	2	329.4	649.7	.009229	1.2945E+04	.158423
26	-10	4	1791.3	3137.5	.031781	1.1640E+04	.138937
27	-10	5	2957.8	4664.0	.036195	9.0013E+03	.115314
28	-10	6	4416.4	7328.9	.033516	1.8911E+04	.119702
29	-9	2	328.9	645.6	.013512	1.0917E+04	.202431
30	-9	3	921.5	1665.3	.033062	8.0469E+03	.172666
31	+0	4	1788.6	3065.3	.046886	9.6029E+03	.187330
32	+0	5	2953.2	4541.1	.054818	7.6246E+03	.169031

Figure 8. Typical Test Parameter and Results List.

SECTION 2
DAMPING POLYMERS

This section contains data on polymeric materials which are commercially available. Not all of the these materials are sold as damping materials; therefore, the damping properties may vary significantly from batch to batch.

2.1 Complete Material Evaluations

Table 2.1 presents the polymers which were evaluated over the entire glassy to rubbery range. Also given in Table 2.1 is the material manufacture, the peak material loss factor (η_p), the material modulus at η_p, and the temperature of η_p at 500 Hertz. The complete data sets for all the materials given in Table 2.1 are contained in Appendix A.

2.2 Preliminary Material Evaluations

Table 2.2 presents the polymers which were evaluated only on a preliminary basis. Although these tests are not complete, the data do give a general indication of the damping characteristics of the materials. The data contained in Appendix B is not recommended for damping design; it is useful only for preliminary material evaluation. If a material looks promising for a particular application, a complete complex modulus test would be required. A complete data set for each material listed in Table 2.2 is contained in Appendix B.

TABLE 2.1

DAMPING POLYMERS

Material	Manufacturer	Peak Material Loss Factor (ηp)	Material Modulus (psi) at ηp	Temperature(°F) of ηp at 500 Hz
ISD-112	3M	1.03	2.43E2	75
Airflex 4500	Air Products	1.93	2.62E3	91
Airflex 4514	Air Products	1.54	2.55E3	110
Airflex 4530	Air Products	1.34	3.57E3	124
Airflex 4814	Air Products	1.62	1.64E3	99
Vinac B-25	Air Products	2.92	9.19E3	153
Cargil 6439	Cargil	2.04	2.93E2	29
Hypalon 48	Dupont	1.85	3.09E3	80
NB491076B	EAR	1.35	2.58E3	126
Pliolite S-6B	Goodyear Chemical	1.30	3.00E2	180
Saflex (PVB) SR41	Monsanto	1.38	1.16E2	93
Plyamul 97-649	Reich Hold Chemical	2.00	2.15E3	134
Dyad 606	Soundcoat	0.84	2.30E3	99
Dyad 609	Soundcoat	1.02	7.75E3	161
VMCH	Union Carbide	1.51	1.07E3	196
VYHH + 45	Union Carbide	1.65	1.61E3	120
VYNS-3	Union Carbide	1.45	1.45E3	209

TABLE 2.2

PRELIMINARY MATERIAL TESTS

Material	Manufacturer
ISD-110	3M
976 DEV	Air Products
1038B	Betham
UZ201	Coating Sciences
Flexane urethane	Devcon
Hypalon 30	Dupont
Hypalon 40	Dupont
C-1002	EAR
Lexan 141	General Electric
PEHA-3	Monsanto
PEHA-4	Monsanto
T-408-23A	Rocket Research

SECTION 3
STRUCTURAL ADHESIVES

Currently, there is interest in using structural adhesives as high strength damping materials. The use of such materials has proven to be an effective method to reduce high cycle fatigue in several aircraft.[1] In these cases, the structure has been redesigned to incorporate a laminated structure with the proper structural adhesive used. In order to help broaden the available material choices, the structural adhesives listed in Table 3.1 were evaluated. A complete set of data for each material is contained in Appendix C.

TABLE 3.1
STRUCTURAL ADHESIVES

Material	Manufacturer	Peak Material Loss Factor (η_p)	Young's Modulus (psi) at η_p	Temperature(°F) of η_p at 500 Hz
2214 Hi-flex	3M	1.00	2.5E4	270
E241N	Allied Resin	0.32	1.87E5	166
Hysol EA956	Dexter Hysol	1.00	3.1E4	160
Fusor 306	Lord Mfg.	0.41	8.85E4	177
Tyrite 7520	Lord Mfg	0.34	8.53E4	149
Phillybond	Philadelphia Resin	0.91	6.08E4	126
Epon 828	Shell Chemical	0.30	1.0E5	120

1. VACCA, S, "Damping in Secondary Aircraft Structure for Low Life Cycle Cost," presented at ASME 1987, Design Technology Conference, Boston, MA, Sept. 27-30.

SECTION 4
ENAMELS

The enamels listed in Table 4.1 were evaluated as potential candidates for the TF-41 Strut Fairing project. These materials are also potential candidates for other hot section jet engine components. A complete set of material data for each material listed in Table 4.1 is contained in Appendix D.

TABLE 4.1
ENAMELS

Material	Manufacturer	Peak Material Loss Factor (ηp)	Young's Modulus (psi) at ηp	Temperature(°F) of ηp at 500 Hz
Corning 1990	Corning	1.30	3.12E5	1127
Corning 7570	Corning	0.40	2.09E6	897
Corning 8463	Corning	0.40	3.61E6	919
Solar S-3B	Solar Turbines	0.47	1.82E6	1001
Solar S-16B	Solar Turbines	0.60	9.45E5	1120
Solar S23-36	Solar Turbines	1.50	1.27E6	1043

SECTION 5
HOW TO READ A NOMOGRAM

The ASTM E756-83 Standard was used to generate the material properties (modulus and material loss factor) given in this report. This data was then plotted on a reduced temperature nomogram, a characteristic plot of the complex modulus as a function of reduced frequency. Equations for loss factor and modulus data were generated and could be be used to calculate material properties at varying temperatures or frequencies. Using the curve representation of the material properties one could also calculate structural properties of damped systems.

The following is a description of the reduced frequency nomogram and the parameters which were used to fit the material property data to a curve on a nomogram plot.

Data displayed in nomogram format is amenable to the development of analytical equations to represent the data. The following equations were used in this report.

Modulus equation

$$\log_{10}(M) = \log_{10}(ML) + \frac{2\log_{10}\left(\frac{MROM}{ML}\right)}{1 + \left(\frac{FROM}{FR}\right)^{N}}$$

Loss Factor Equation

$$\log_{10}(ETA) = \log_{10}(ETAFROL + \frac{C}{2}((SL + SH)A + (SL - SH)(1 - SQRT(1 + A^2))))$$

where

$$A = \frac{\log_{10}(FR) - \log_{10}(FROL)}{C}$$

and

$$\log_{10}(FR) = \log_{10}(F) - \frac{12(T - T)_{zero}}{K + T - T_{zero}}$$

with

K = 525 for English units, and

K = 291 2/3 for metric units.

The parameters are defined as:

M is the material storage modulus;

NROM is the inflection point of the storage modulus curve as read on the modulus scale;

FROM is the reduced frequency value of this inflection point;

N is the slope of the curve at the inflection point;

ML is the Young's modulus value of the lower horizontal asymptote of this curve;

ETA is the loss factor;

FR is the reduced frequency;

ETAFROL is the loss factor value of the damping peak;

FROL is the reduced frequency value of the damping peak;

SL is the slope of asymptotic line for low values of reduced frequency;

SH is the slope of asymptotic line for high values of reduced frequency;

C is a parameter which defines the curvature of the damping peak;

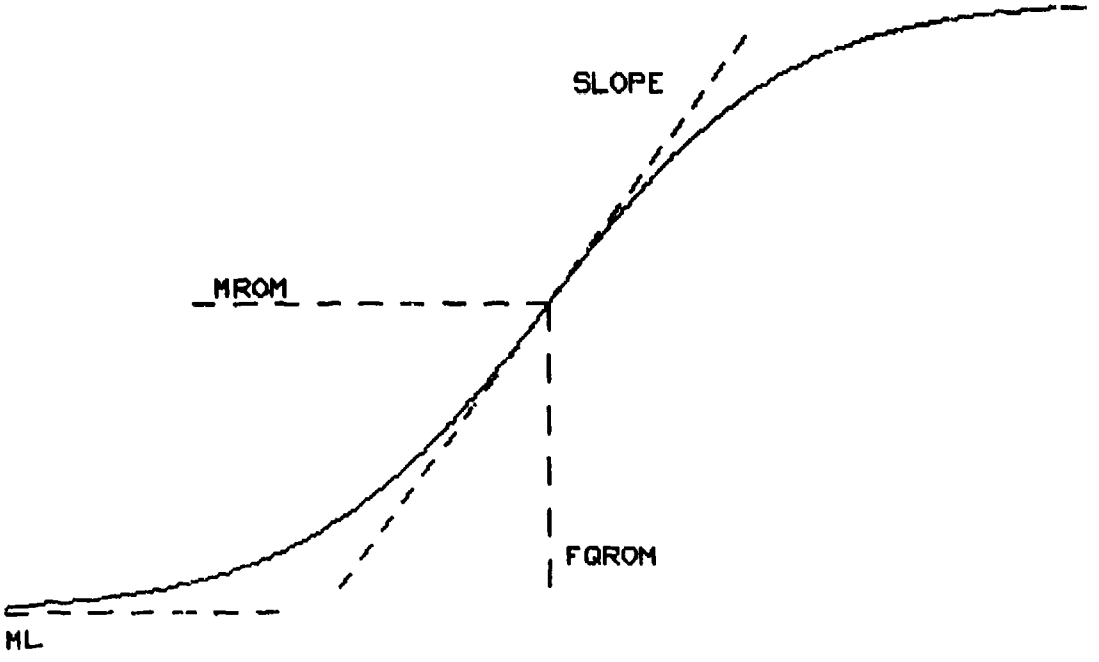
T_{zero} is a reference temperature of the material;

T is the temperature at which the material properties are to be calculated;

F is the frequency at which the material properties are to be calculated;

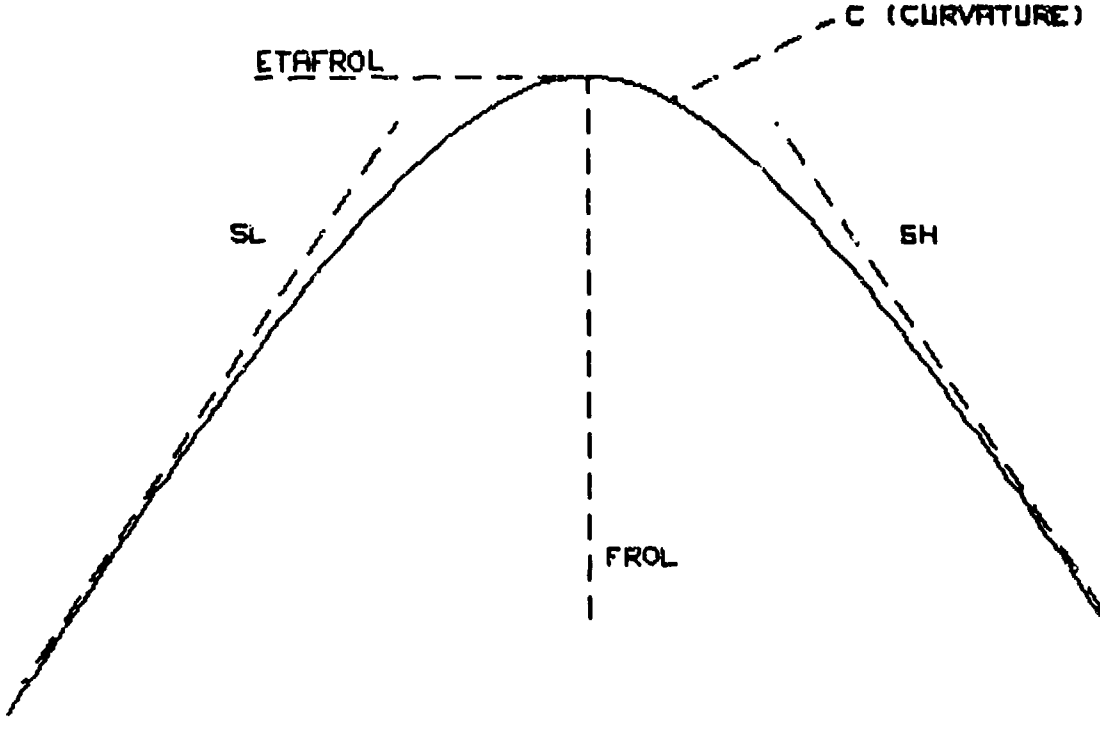
Figures 9 and 10 illustrate the physical meaning of these curve parameters.

It should be noted that the modulus equation yields shear modulus for materials tested in a sandwich configuration and Young's modulus for materials tested in free-layer (Oberst) configuration. If the equation parameter T_{zero} is given in degrees



$F_{\alpha T}$

Figure 9. Modulus Parameters.



$F_{\alpha T}$

Figure 10. Loss Factor Parameters.

Centigrade the modulus curve parameters will yield modulus in Pascals and if T_{zero} is given in degrees Fahrenheit, the modulus curve parameters will yield modulus in psi.

Figure 11 is a reduced temperature nomogram with loss factor and shear modulus curves displayed. The data points are not displayed so that the plot is more readable. The procedure for reading the nomogram is as follows:

a) Select a combination of temperature and frequency, for example 200 Hz and 150°F.

b) Find the point for 200 Hz on the right-hand axis.

c) Follow the point horizontally to the line for 150°F.

d) At this intersection, draw a vertical line.

e) Read the modulus and loss factor values off the appropriate graph, at the point of intersection with the vertical line.

In this example, modulus G (200 Hz, 150°F) = 40 psi and the loss factor (200 Hz, 150°F) = 1.0.

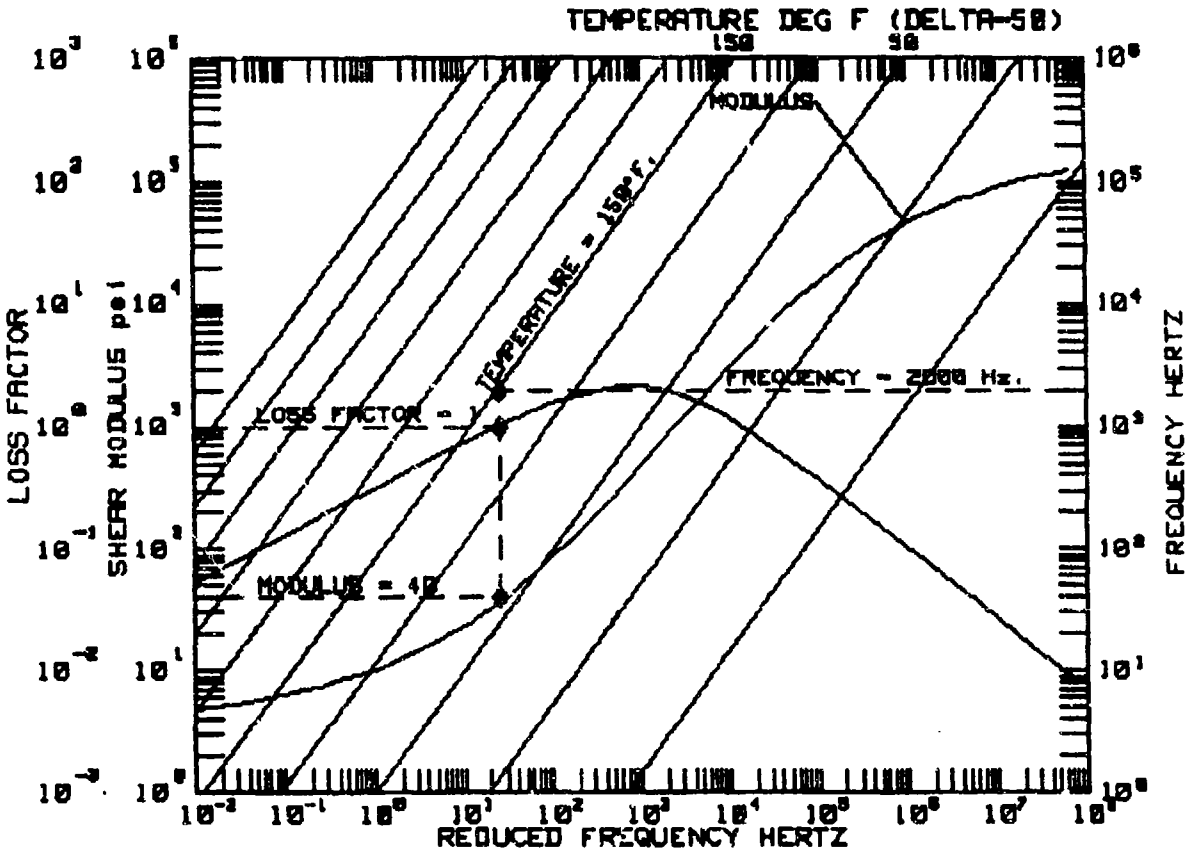


Figure 11. Nomogram Example.

SECTION 6
MANUFACTURERS

Table 6.1 contains the list of the manufacturers for all the materials given in this report. The table includes a company contact, the mailing address, and a telephone number.

TABLE 6.1
LIST OF MANUFACTURERS

Air Products & Chemicals
P. O. Box 2662
Allentown, PA 18105
1-800-523-9476 or
215-481-6799

Allied Resin Corporation
Weymouth Industrial Park
East Weymouth, MA 02189
617-337-6070

The Betham Corporation
Lincoln Blvd. & River Road
Middlesex, NJ 08846
201-356-2870

Cargill
Chemical Products Division
762 Marietta Blvd. N.W.
Atlanta, GA 30318
ATTN: Rodney J. Hicks
1-800-241-4460

Coating Sciences, Inc.
48 East Newberry Road
Bloomfield, CT 06002
203-243-3700

Corning Glass Works
Corning, NY 14830
607-974-9000

Devcon Corporation
30 Endicott Street
Danvers, MA 01923
617-777-1100

E.I. DuPont DeNemours & Company
4330 Allen Road
Stow, OH 44224-1094
216-929-2961

EAR Division Cabot Corp.
7911 Zionsville Road
P.O. Box 68898
Indianapolis, IN 46268-0898
317-872-1111
ATTN: Greg Handy

General Electric Company
16600 Sprague Road
Suite 380
Middleburg Heights, OH 44130
216-243-5811

Goodyear Chemicals
The Goodyear Tire & Rubber Co
1144 East Market Street
Akron, OH 44316
1-800-321-2416

Hysol Division
The Dexter Corporation
2850 Willow Pass Road
Pittsburg, CA 94565
312-687-4201

TABLE 6.1
LIST OF MANUFACTURERS
(Continued)

Lord Corp.
Chemical Products Group
2000 West Grandview Blvd.
P.O. Box 10038
Erie, PA 16514-0038
814-868-3611

3M Industrial Specialties
Division
Bldg 230-1F-02, 3M Center
St. Paul, MN 55144-1000
612-733-7222
ATTN: Roger Johnson

Monsanto Corp
800 N. Lindberg Blvd.
St. Louis, MO 63167
1-800-325-4330

Philadelphia Resins Corp
P.O. Box 454
130 Commerce Driven
Montgomeryville, PA 18936
215-855-8450

Reich Hold Chemicals, Inc
525 North Broadway
White Plains, NY 10603
914-682-5700

Rocket Research Company
2801 Far Hills Avenue
Dayton, OH 45419
513-298-6644
ATTN: David H. Grupe

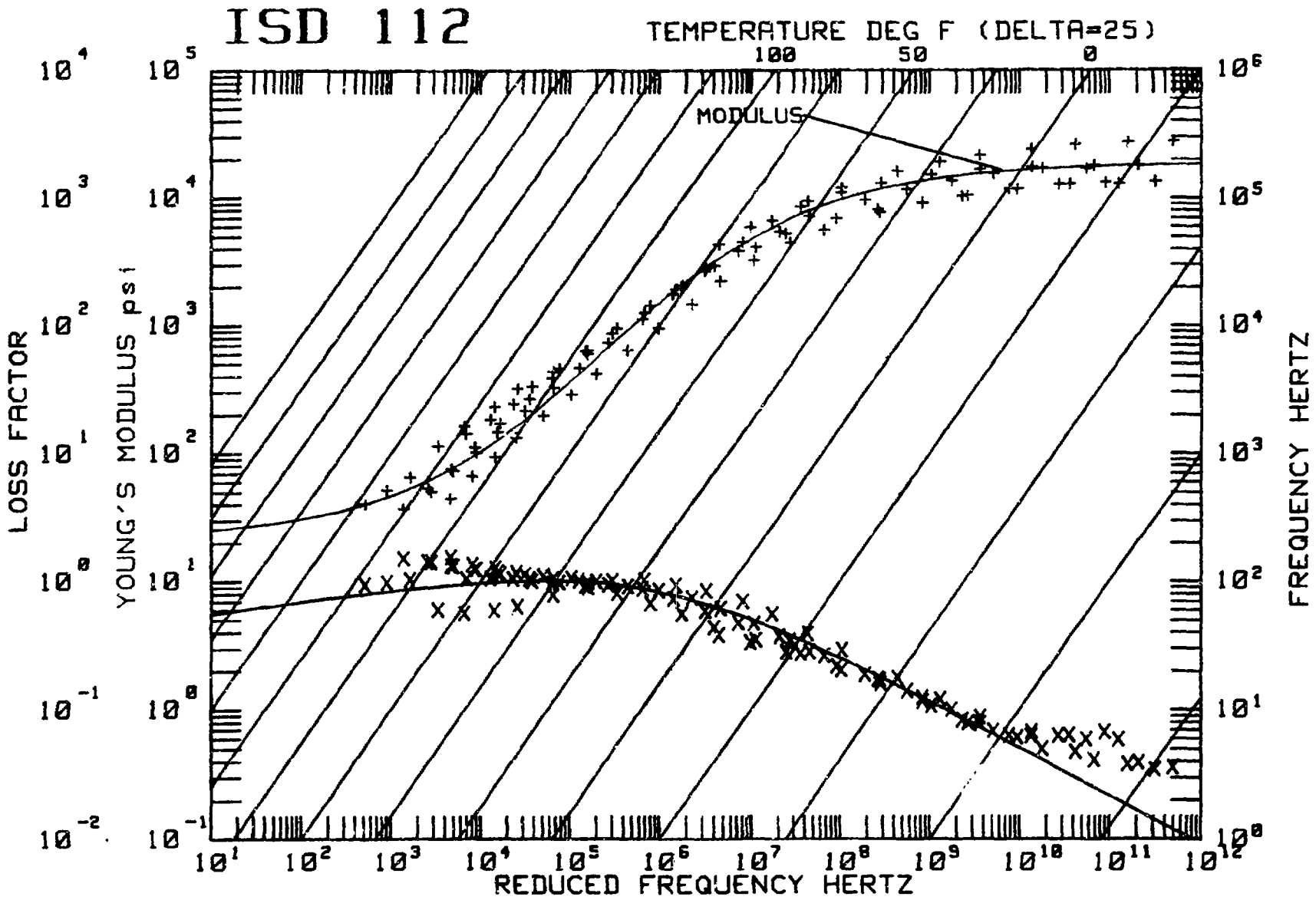
Shell Chemical Company
1415 West 22nd Street
Oak Brook, IL 60522-9008
312-572-5500

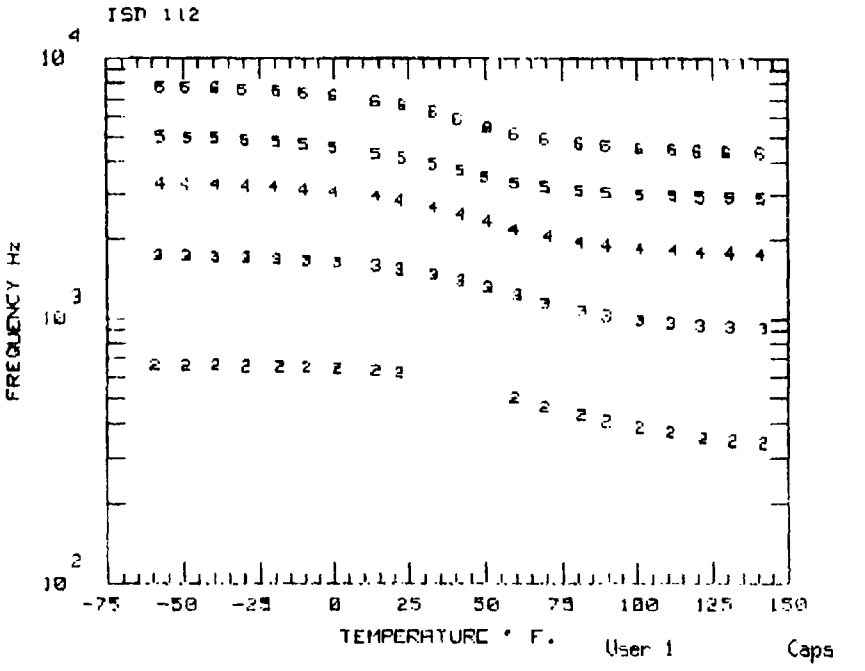
Solar Turbines, Inc
P.O. Box 85376
San Diego, CA 92138-5376
619-544-5091

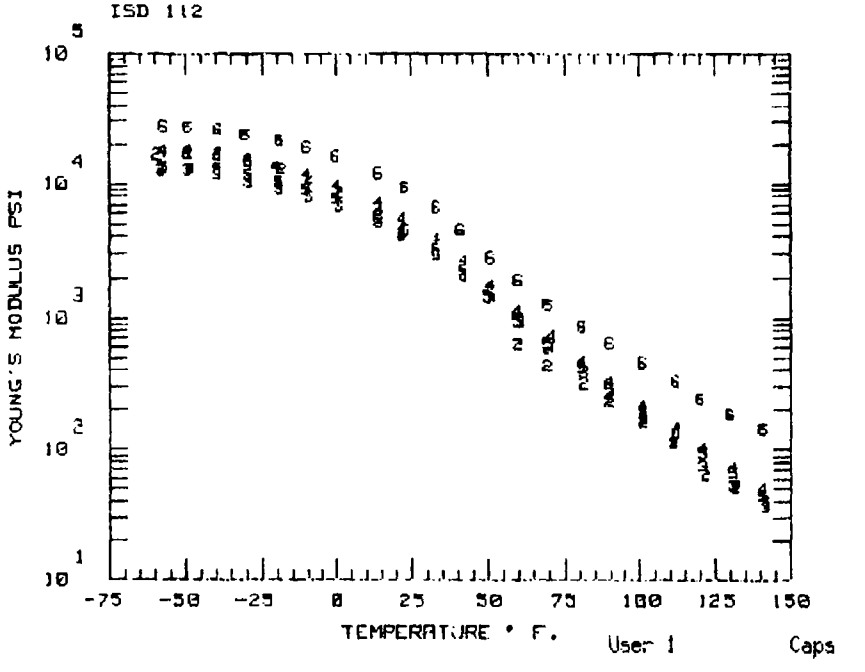
The Soundcoat Company, Inc.
1 Burt Drive
Deer Park, NY 11729
516-242-2200
ATTN: Carl L. Wolaver

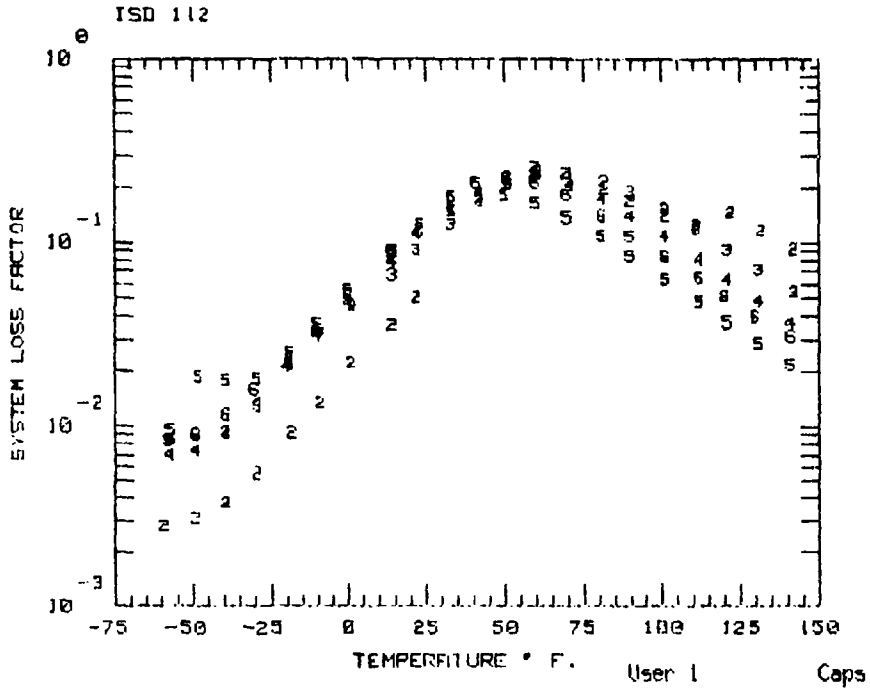
Union Carbide Chem Specialty Div.
120 S. Riverside Plaza
Chicago, IL 60606
1-800-223-0537
ATTN: Pat Lagosino

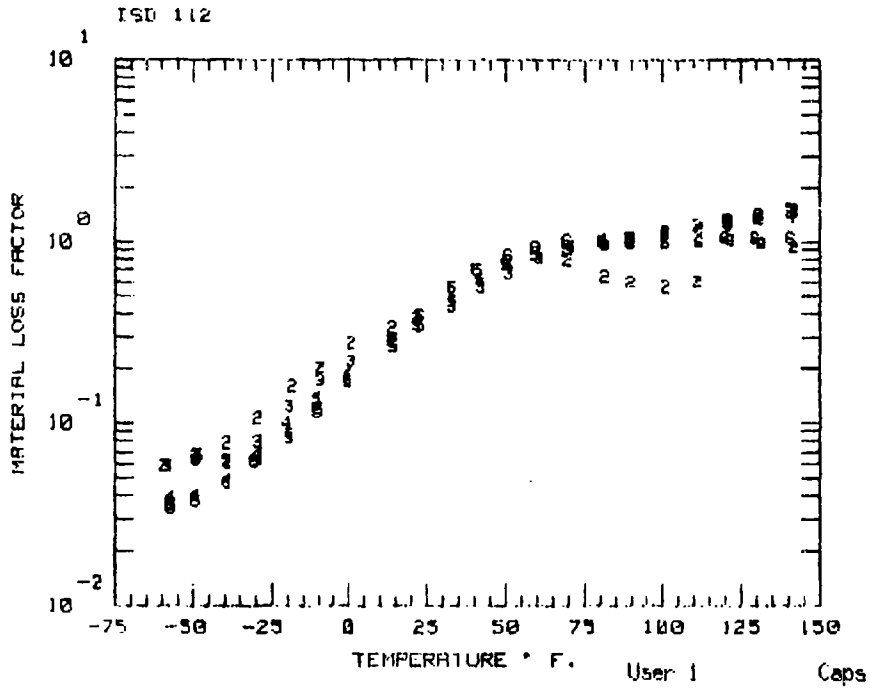
APPENDIX A
DAMPING POLYMERS

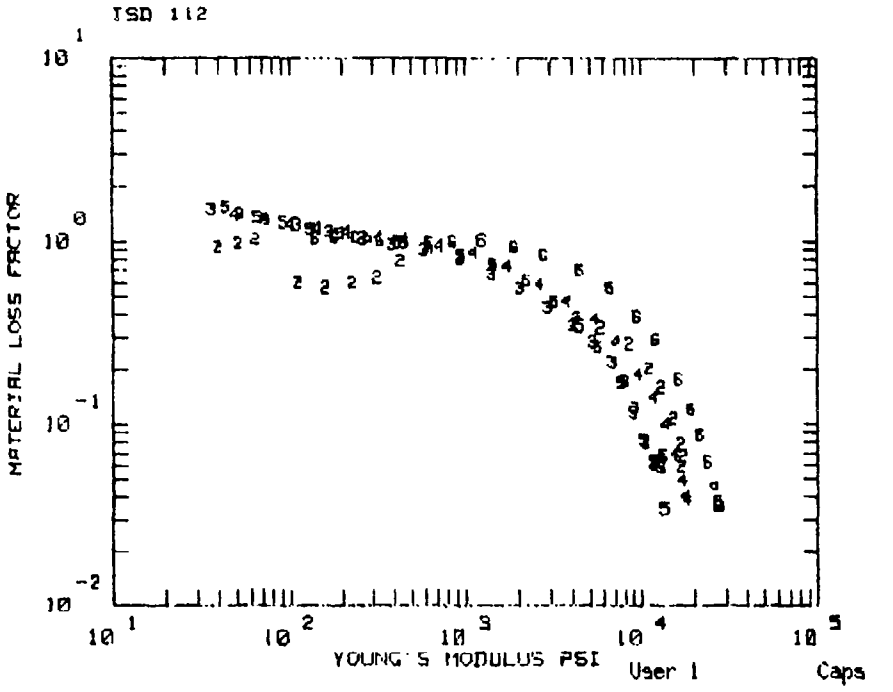

ISD 112
TEMPERATURE DEG F (DELTA=25)
100
50
0
MODULUS
LOSS FACTOR
YOUNG'S MODULUS psi
FREQUENCY HERTZ
REDUCED FREQUENCY HERTZ


ISD 112
FREQUENCY Hz
TEMPERATURE ° F.
User 1
Caps


ISD 112
YOUNG'S MODULUS PSI
TEMPERATURE ° F.
User 1
Caps


ISD 112
SYSTEM LOSS FACTOR
TEMPERATURE ° F.
User 1
Caps


ISD 112
MATERIAL LOSS FACTOR
TEMPERATURE ° F.
User 1
Caps



TERIAL CODE: ED0425
ERIAL: ISD 112-A

UNITS ARE ENGLISH

LOG( )=LOG(ML)+(2LOG(MR.M/ML))/(1+(FQROM/FR)^SLOPE)

TZE .0	FQROM	MRCM	SLOPE	ML
150.0	2.465E+05	F.450E+02	0.372	2.194E+01

LOG(ETA)=LOG(ETFROL)+((SH+SL)A+(SL-SH)(1-SQR(1+A^2)))C/2

TZERO	ETFROL	SL	SH	FROL	C
150.0	.870	.115	-.385	7.340E+05	1.800

LOG(FR)=LOG(F)-12(T-T0)/(525+T-T0)

A=(LOG(FR)-LOG(FROL))/C

MATERIAL CODE: ED042S
MATERIAL: ISD 112-A
MANUFACTURER: UDRI
REMARKS: 3M MATL. ON AL BEAMS
DATE: 4 Mar 1988
ENTERED BY: SEO
BEAM MATERIAL: STAINLESS STEEL
BEAM NUMBER: AL-080-G & AL-080-E
BEAM TYPE: SANDWICH BEAM
BEAM LENGTH: 7 in
BEAM THICKNESS: .07882 in
BEAM DENSITY: .1 lb/cu in
DAMPING MATERIAL THICKNESS: .002 in
DAMPING MATERIAL DENSITY: .035 lb/cu in

INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	YOUNG'S MODULUS PSI	MATERIAL LOSS FACTOR
1	-59	2	331.5	657.7	.002797	1.6686E+04	.058660
2	-58	3	928.2	1738.5	.008329	1.2769E+04	.058245
3	-57	4	1803.9	3291.6	.006974	1.7816E+04	.038761
4	-57	5	2979.2	4963.1	.009543	1.3287E+04	.034358
5	-57	6	4452.4	7728.4	.008521	2.7332E+04	.035599
6	-49	2	331.0	657.2	.003088	1.7181E+04	.066768
7	-49	3	926.9	1736.1	.009015	1.2713E+04	.062991
8	-49	4	1801.8	3286.4	.007323	1.7692E+04	.040583
9	-49	6	4446.3	7707.9	.009064	2.6968E+04	.037659
10	-48	5	2975.1	4949.3	.018580	1.3095E+04	.066673
11	-39	2	330.5	655.6	.003710	1.6537E+04	.077796
12	-39	3	925.6	1722.6	.009224	1.1640E+04	.060525
13	-39	4	1799.1	3267.2	.009107	1.6811E+04	.048916
14	-39	5	2971.0	4924.7	.017647	1.2730E+04	.062662
15	-39	6	4438.6	7654.8	.011533	2.5742E+04	.046891
16	-30	6	4431.7	7568.8	.015905	2.3721E+04	.062261
17	-29	2	330.0	653.2	.005509	1.5039E+04	.106695
18	-29	3	924.2	1706.2	.012998	1.0456E+04	.079325
19	-29	4	1796.4	3234.7	.013372	1.5313E+04	.067886
20	-29	5	2966.4	4858.6	.018191	1.1675E+04	.062566
21	-20	4	1794.0	3191.4	.021107	1.3516E+04	.099781
22	-19	3	922.9	1686.2	.021942	9.1766E+03	.123456
23	-19	5	2961.9	4759.3	.025028	1.0223E+04	.082464
24	-19	6	4423.3	7454.4	.023231	2.1300E+04	.086847
25	-18	2	329.4	649.7	.009229	1.2945E+04	.158423
26	-10	4	1791.3	3137.5	.031781	1.1640E+04	.138937
27	-10	5	2957.8	4664.0	.036195	9.0013E+03	.115314
28	-10	6	4416.4	7328.9	.033516	1.8911E+04	.119702
29	-9	2	328.9	645.6	.013512	1.0917E+04	.202431
30	-9	3	921.5	1665.3	.033062	8.0469E+03	.172666
31	+0	4	1788.6	3065.3	.046886	9.6029E+03	.187330
32	+0	5	2953.?	4541.1	.054818	7.6246E+03	.169031

MATERIAL CODE: ED0425
MATERIAL: ISD 112-A
MANUFACTURER: UDRI
REMARKS: 3M MATL. ON AL BEAMS
DATE: 4 Mar 1988
ENTERED BY: SEO
BEAM MATERIAL: STAINLESS STEEL
BEAM NUMBER: AL-080-G & AL-080-E
BEAM TYPE: SANDWICH BEAM
BEAM LENGTH: 7 in
BEAM THICKNESS: .07882 in
BEAM DENSITY: .1 lb/cu in
DAMPING MATERIAL THICKNESS: .002 in
DAMPING MATERIAL DENSITY: .035 lb/cu in

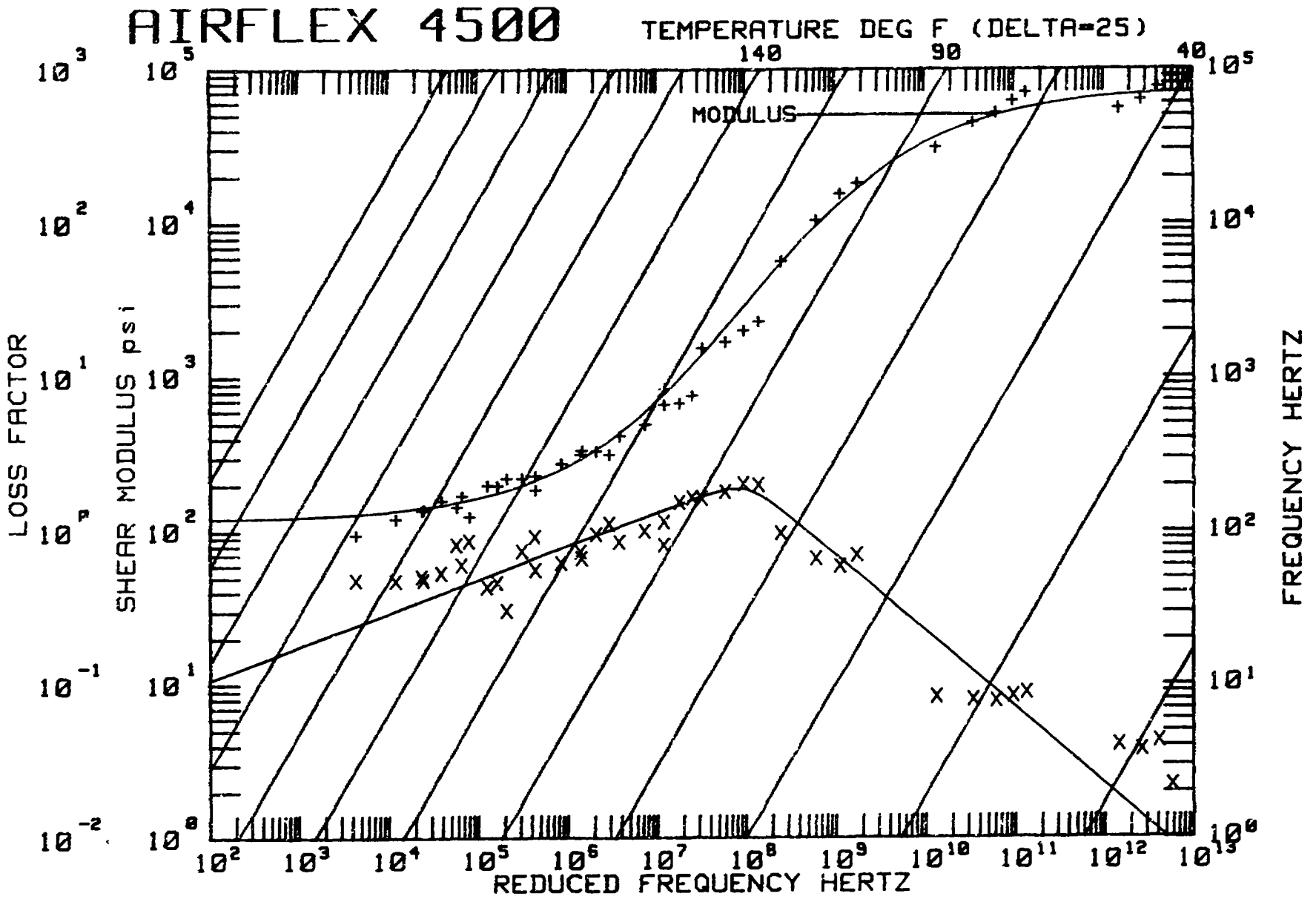
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	YOUNG'S MODULUS PSI	MATERIAL LOSS FACTOR
33	+0	6	4408.7	7156.8	.051825	1.6056E+04	.175633
34	+1	2	328.4	639.2	.022114	8.4516E+03	.273141
35	+1	3	920.2	1637.9	.045362	6.8334E+03	.216811
36	+14	2	327.8	627.8	.035745	5.8367E+03	.334337
37	+14	3	918.4	1589.2	.066785	5.2221E+03	.280124
38	+14	4	1784.9	2947.0	.078716	7.0990E+03	.281524
39	+14	5	2946.8	4313.8	.087897	5.5871E+03	.262760
40	+14	6	4398.0	6848.3	.091025	1.1962E+04	.289180
41	+22	2	327.3	615.9	.050361	4.2746E+03	.377460
42	+22	3	917.3	1540.7	.091168	4.0587E+03	.346000
43	+22	4	1782.7	2835.5	.111169	5.3975E+03	.370297
44	+23	5	2942.7	4152.5	.113940	4.4435E+03	.341908
45	+23	6	4391.1	6597.8	.125564	9.3999E+03	.388722
46	+33	3	915.8	1471.6	.126369	2.9112E+03	.434407
47	+33	4	1779.8	2683.1	.148975	3.7874E+03	.469442
48	+33	5	2938.1	3935.4	.148781	3.2010E+03	.466029
49	+33	6	4383.4	6241.7	.178269	6.5969E+03	.555024
50	+41	6	4377.3	5852.6	.212287	4.4636E+03	.694505
51	+42	3	914.6	1397.3	.171069	2.0521E+03	.556715
52	+42	4	1777.4	2532.4	.186816	2.6577E+03	.585355
53	+42	5	2934.0	3714.3	.176881	2.2112E+03	.610813
54	+50	5	2930.4	3494.4	.180965	1.4440E+03	.740636
55	+51	3	913.4	1314.1	.209271	1.4112E+03	.669469
56	+51	4	1775.0	2362.2	.220082	1.7465E+03	.727746
57	+51	6	4369.7	5429.8	.224944	2.7903E+03	.838407
58	+60	2	325.4	497.1	.257910	6.2475E+02	.922598
59	+60	4	1772.6	2198.8	.230880	1.1119E+03	.868599
60	+60	5	2925.8	3319.9	.164106	9.4589E+02	.843100
61	+60	6	4362.8	5139.9	.210869	1.9004E+03	.925945
62	+61	3	912.1	1228.6	.241305	9.4540E+02	.804397
63	+70	2	324.9	458.3	.239413	4.3295E+02	.784604
64	+70	3	910.8	1136.7	.240179	5.9339E+02	.897550

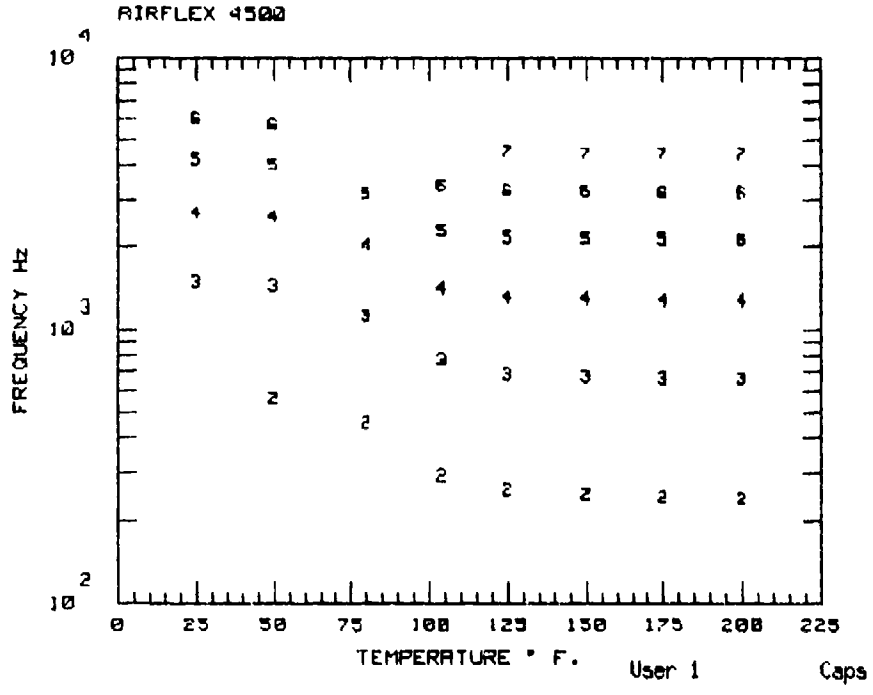
MATERIAL CODE: ED0425
MATERIAL: ISD 112-A
MANUFACTURER: UDRI
REMARKS: 3M MATL. ON AL BEAMS
DATE: 4 Mar 1988
ENTERED BY: SEQ
BEAM MATERIAL: STAINLESS STEEL
BEAM NUMBER: AL-060-G & AL-080-E
BEAM TYPE: SANDWICH BEAM
BEAM LENGTH: 7 in
BEAM THICKNESS: .07882 in
BEAM DENSITY: .1 lb/cu in
DAMPING MATERIAL THICKNESS: .002 in
DAMPING MATERIAL DENSITY: .035 lb/cu in

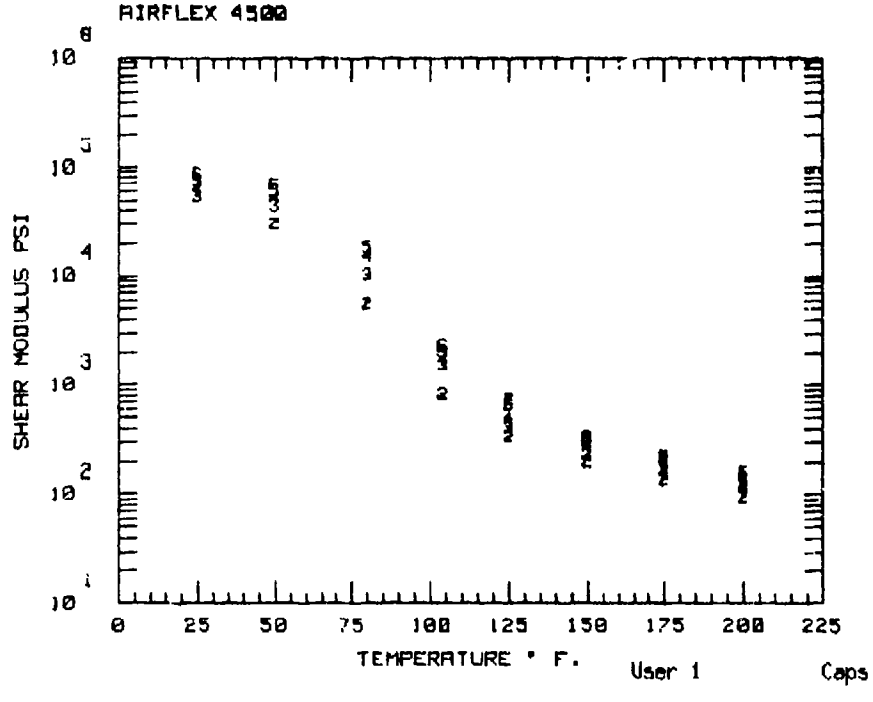
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	YOUNG'S MODULUS PSI	MATERIAL LOSS FACTOR
65	+70	5	2921.2	3195.0	.136692	6.3482E+02	.911977
66	+70	6	4355.1	4892.0	.182527	1.2478E+03	1.015750
67	+71	4	1769.6	2067.2	.206800	7.2040E+02	.939833
68	+81	4	1766.9	1966.4	.171907	4.6120E+02	1.015278
69	+81	5	2916.2	3098.9	.108436	4.1605E+02	.994134
70	+81	6	4346.7	4721.0	.139923	8.5571E+02	1.002765
71	+82	2	324.2	429.3	.194506	3.1832E+02	.634090
72	+82	3	909.2	1067.7	.215310	3.8656E+02	.962243
73	+90	2	323.8	405.9	.169180	2.3022E+02	.593935
74	+90	3	908.1	1021.7	.188169	2.6508E+02	1.040774
75	+90	4	1764.5	1906.8	.139105	3.2334E+02	1.052480
76	+90	5	2912.1	3037.7	.084734	2.9578E+02	1.058399
77	+90	6	4339.8	4617.2	.108930	6.3132E+02	.981636
78	+101	2	323.2	384.8	.139873	1.6154E+02	.562635
79	+101	3	906.6	981.9	.152050	1.7055E+02	1.134067
80	+101	4	1761.6	1856.6	.107759	2.1420E+02	1.124817
81	+101	5	2907.1	2992.0	.063234	1.9559E+02	1.099108
82	+101	6	4331.3	4532.5	.083956	4.5775E+02	.982002
83	+111	2	322.7	368.3	.123442	1.1327E+02	.598651
84	+111	3	905.3	954.7	.119116	1.1122E+02	1.241600
85	+112	4	1758.6	1822.9	.081339	1.4591E+02	1.174122
86	+112	5	2902.1	2958.3	.047460	1.3308E+02	1.170169
87	+112	6	4322.9	4466.6	.064679	3.2935E+02	1.003311
88	+120	6	4316.8	4420.9	.051255	2.4238E+02	1.045773
89	+121	3	903.9	937.0	.090997	7.5037E+01	1.322334
90	+121	4	1756.2	1800.2	.062415	1.0166E+02	1.242262
91	+121	5	2898.0	2935.7	.036841	9.3368E+01	1.264659
92	+122	2	322.2	350.5	.145255	6.4832E+01	1.026828
93	+130	6	4309.1	4385.7	.039801	1.8268E+02	1.051596
94	+131	3	902.6	925.5	.071481	5.2926E+01	1.415892
95	+131	4	1753.5	1784.0	.048172	7.2518E+01	1.306868
96	+131	5	2893.4	2918.4	.028352	6.6210E+01	1.348730

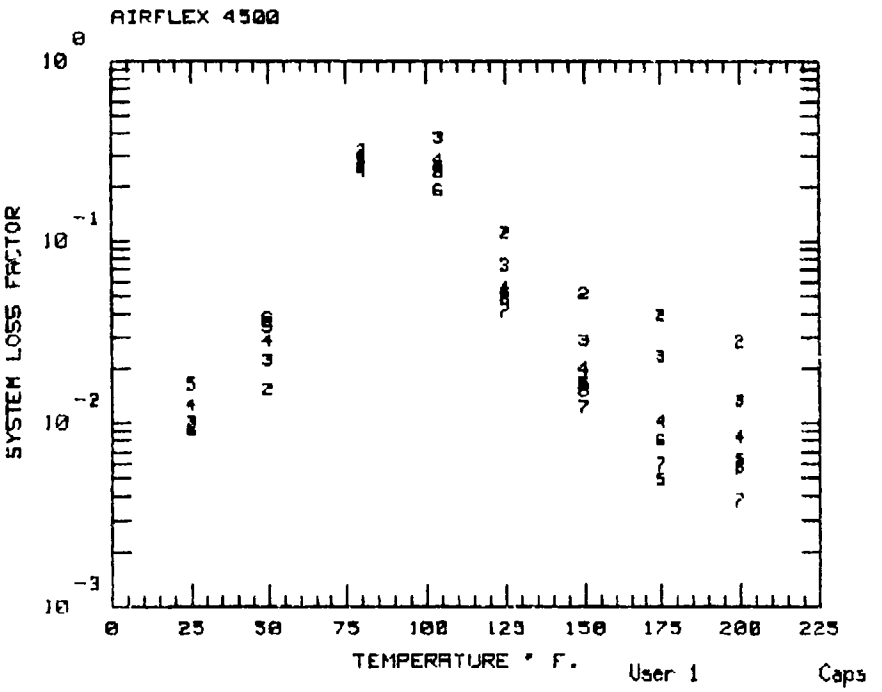
MATERIAL CODE: ED0425
MATERIAL: ISD 112-A
MANUFACTURER: UDRI
REMARKS: 3M MATL. ON AL BEAMS
DATE: 4 Mar 1988
ENTERED BY: SEO
BEAM MATERIAL: STAINLESS STEEL
BEAM NUMBER: AL-080-G & AL-080-E
BEAM TYPE: SANDWICH BEAM
BEAM LENGTH: 7 in
BEAM THICKNESS: .07882 in
BEAM DENSITY: .1 lb/cu in
DAMPING MATERIAL THICKNESS: .002 in
DAMPING MATERIAL DENSITY: .035 lb/cu in

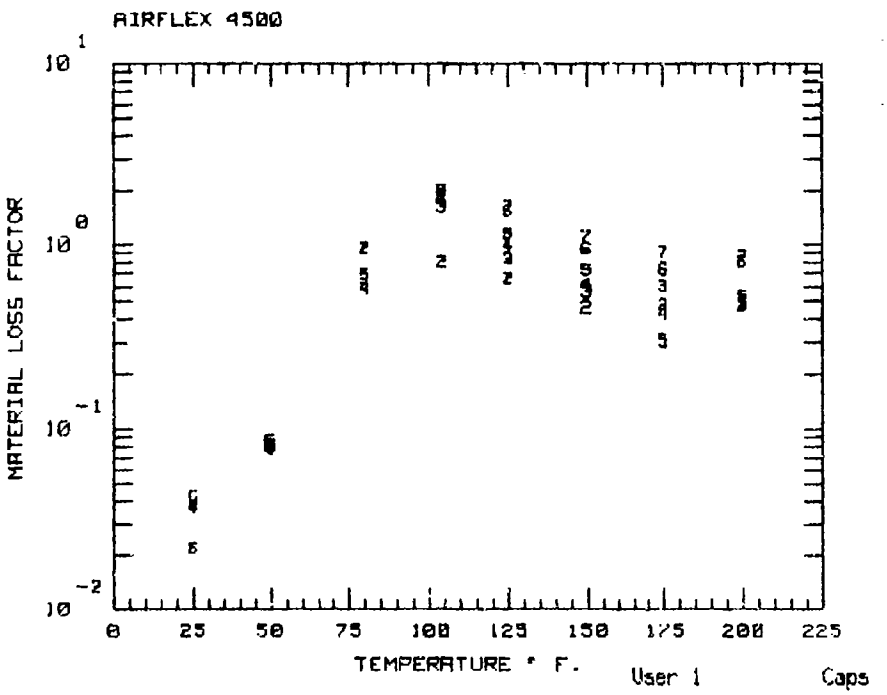
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	YOUNG'S MODULUS PSI	MATERIAL LOSS FACTOR
97	+132	2	321.6	344.2	.116420	5.1554E+01	.973996
98	+141	4	1750.9	1770.8	.036657	5.0130E+01	1.406603
99	+141	5	2888.8	2903.5	.021817	4.4119E+01	1.534525
100	+141	6	4300.7	4358.1	.031110	1.4159E+02	1.041361
101	+142	2	321.1	338.7	.092120	4.0230E+01	.936765
102	+142	3	901.1	916.4	.053829	3.6551E+01	1.497237

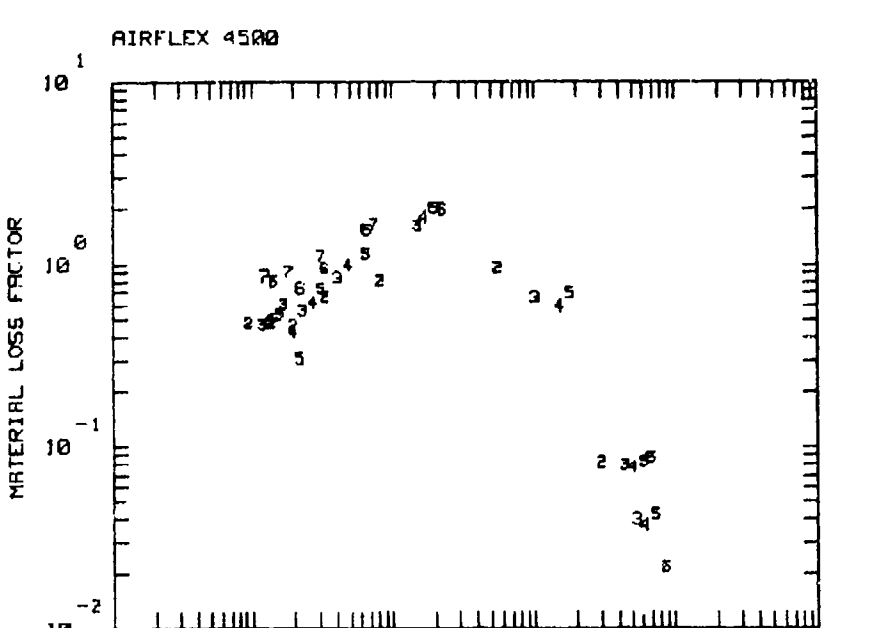

AIRFLEX 4500
TEMPERATURE DEG F (DELTA=25)
140
90
40
MODULUS
LOSS FACTOR
SHEAR MODULUS psi
FREQUENCY HERTZ
REDUCED FREQUENCY HERTZ


AIRFLEX 4500
FREQUENCY Hz
TEMPERATURE ° F.
User 1
Caps


AIRFLEX 4500
SHEAR MODULUS PSI
TEMPERATURE ° F.
User 1
Caps


AIRFLEX 4500
SYSTEM LOSS FACTOR
10^0
10^-1
10^-2
10^-3
0
25
50
75
100
125
150
175
200
225
TEMPERATURE ° F.
User 1
Caps


AIRFLEX 4500
MATERIAL LOSS FACTOR
10^1
10^0
10^-1
10^-2
0
25
50
75
100
125
150
175
200
225
TEMPERATURE ° F.
User 1
Caps



MATERIAL CODE: A4500
MATERIAL: 4500

UNITS ARE ENGLISH
LOG(M)=LOG(ML)+(2LOG(MROM/ML))/(1+(FQROM/FR)^SLOPE)

TZERO	FQROM	MROM	SLOPE	ML
250.0	1.000E+08	3.000E+03	0.420	1.200E+02

LOG(ETA)=LOG(ETFROL)+((SH+SL)A+(SL-SH)(1-SQR(1+A^2)))C/2

TZERO	ETFROL	SL	SH	FROL	C
250.0	1.900	.220	-.500	1.000E+08	.200

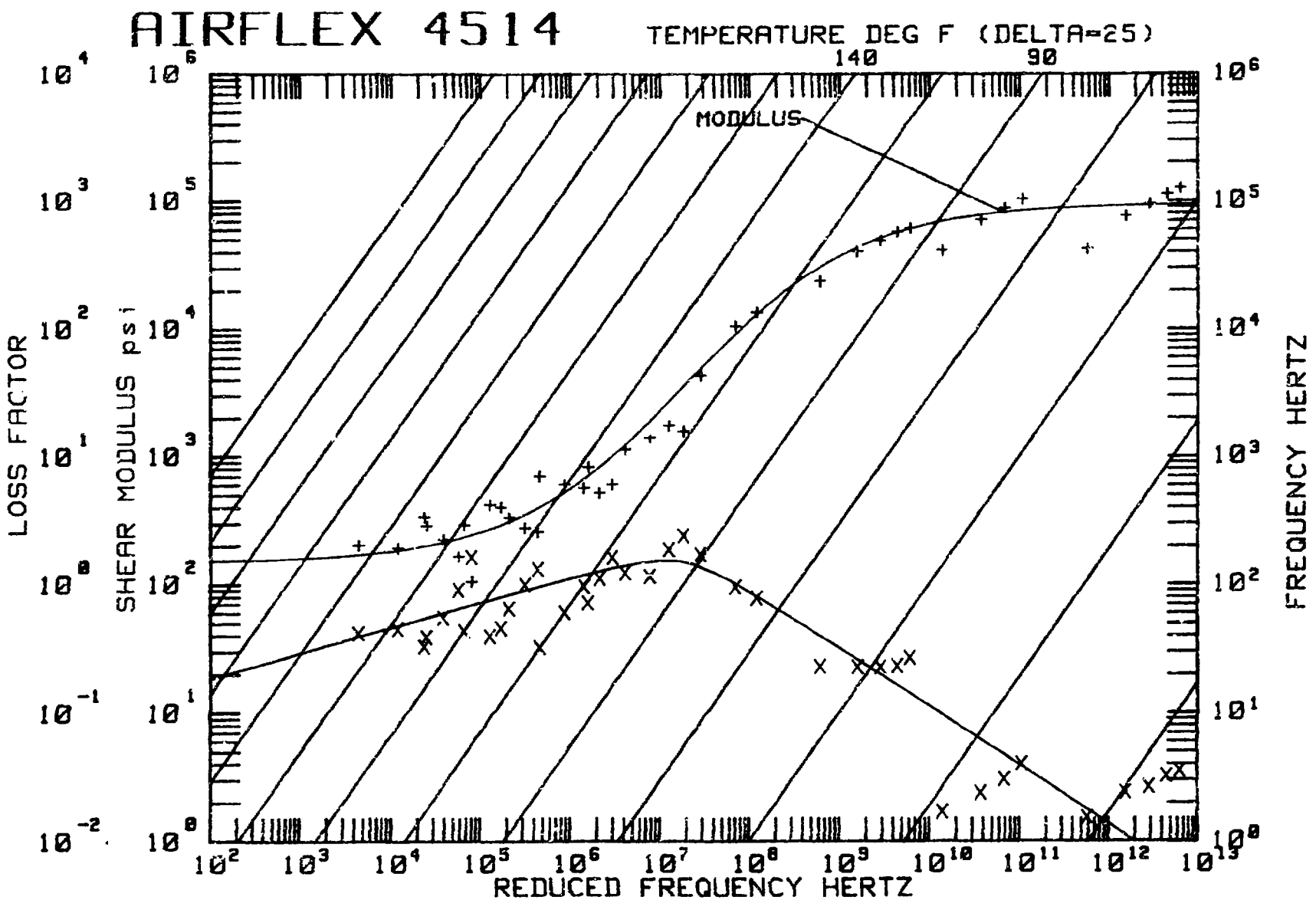
LOG(FR)=LOG(F)-12(T-T0)/(525+T-T0)
A=(LOG(FR)-LOG(FROL))/C

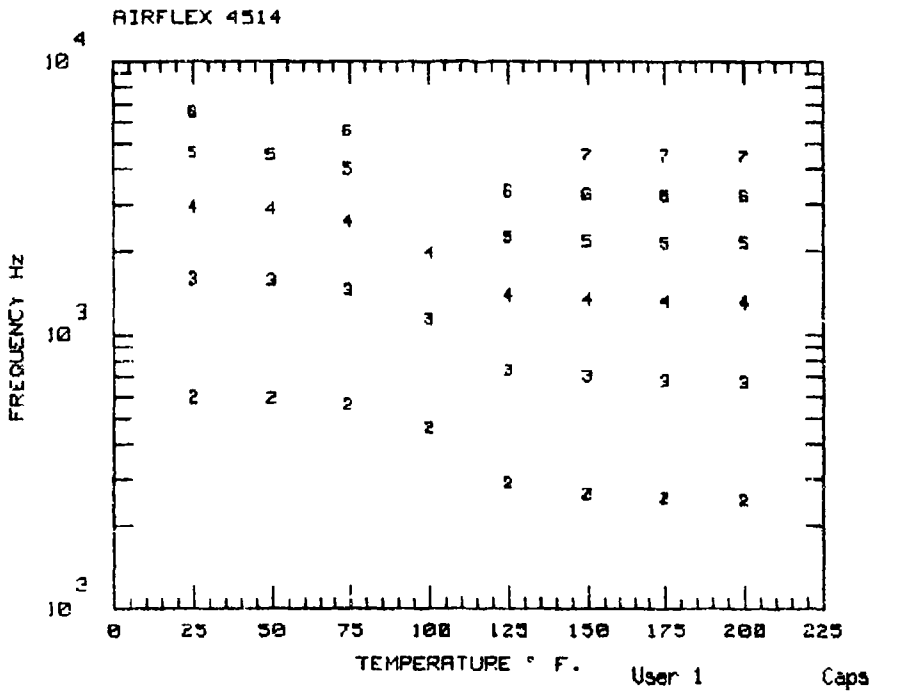
MATERIAL CODE: A4500
MATERIAL: 4500
MANUFACTURER: AIRFLEX
REMARKS: TESTED 1-16-87
DATE: 19 Jan 1987
ENTERED BY: TVG
BEAM MATERIAL: STAINLESS STEEL
BEAM NUMBER: 7-3 AND 7-7
BEAM TYPE: SANDWICH BEAM
BEAM LENGTH: 7 in
BEAM THICKNESS: .0591 in
BEAM DENSITY: .283 lb/cu in
DAMPING MATERIAL THICKNESS: .0239 in
DAMPING MATERIAL DENSITY: .0401 lb/cu in

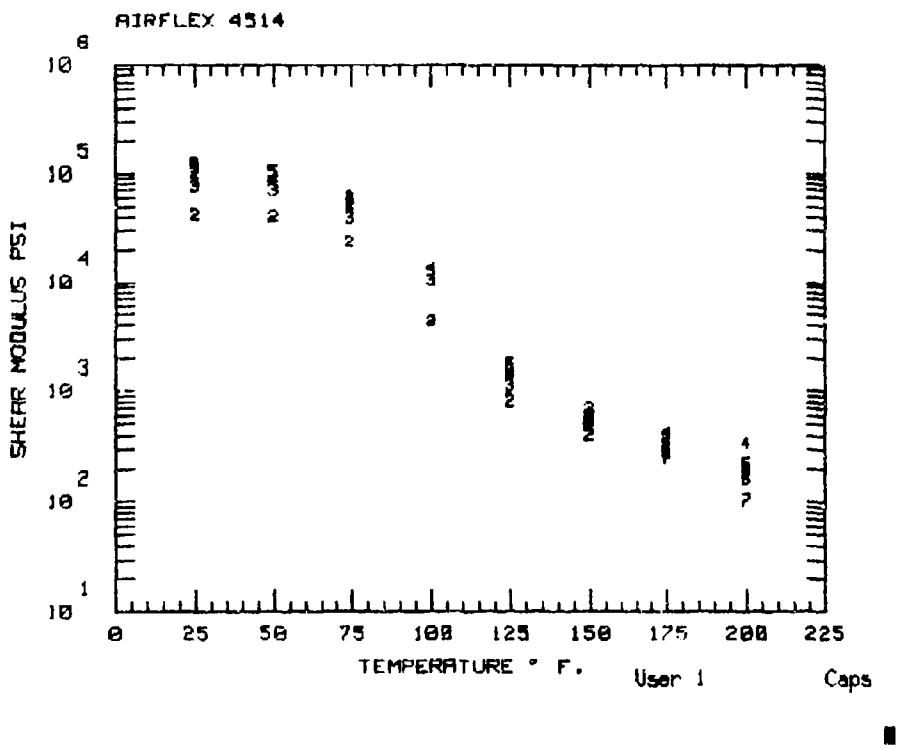
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	SHEAR MODULUS PSI	MATERIAL LOSS FACTOR
1	+25	3	671.7	1488.5	.010080	5.4588E+04	.039873
2	+25	4	1318.2	2690.9	.012640	6.1736E+04	.037092
3	+25	5	2185.2	4205.7	.016310	7.4317E+04	.042137
4	+25	6	3273.9	5985.1	.009070	8.6706E+04	.021755
5	+50	2	241.0	560.3	.015350	3.0378E+04	.081835
6	+50	3	669.9	1445.1	.022350	4.4321E+04	.078587
7	+50	4	1314.7	2596.6	.028270	5.0879E+04	.076825
8	+50	5	2179.2	4034.0	.033910	6.0683E+04	.092713
9	+50	6	3264.8	5691.4	.037950	6.8842E+04	.087246
10	+80	2	240.1	455.3	.319100	5.5891E+03	.958068
11	+80	3	667.7	1117.4	.268750	1.0293E+04	.655182
12	+80	4	1310.4	2042.5	.248240	1.5319E+04	.588452
13	+80	5	2172.1	3140.9	.277800	1.8055E+04	.689430
14	+104	2	239.4	291.7	.240880	8.3026E+02	.804031
15	+104	3	666.0	775.0	.372390	1.5282E+03	1.614032
16	+104	4	1307.0	1422.0	.279890	1.6770E+03	1.793514
17	+104	5	2166.5	2296.0	.241290	1.9851E+03	2.018151
18	+104	6	3245.0	3381.0	.189880	2.2806E+03	1.985648
19	+125	2	238.7	259.6	.111710	3.3253E+02	.661841
20	+125	3	664.5	686.7	.073540	4.1263E+02	.842615
21	+125	4	1304.0	1323.6	.055000	4.8947E+02	.993985
22	+125	5	2161.5	2182.0	.051740	6.5475E+02	1.144711
23	+125	6	3237.3	3244.0	.047970	6.6826E+02	1.533431
24	+125	7	4518.8	4514.0	.041710	7.4782E+02	1.645051
25	+150	2	238.0	249.4	.051400	1.9748E+02	.459520
26	+150	3	662.7	671.1	.028610	2.2923E+02	.555313
27	+150	4	1300.4	1303.6	.019940	2.7495E+02	.616830
28	+150	5	2155.6	2149.9	.016460	3.1501E+02	.728650
29	+150	6	3228.1	3208.6	.015050	3.3019E+02	.947224
30	+150	7	4506.2	4467.6	.012180	3.1398E+02	1.114995
31	+175	2	237.3	244.4	.033240	1.3766E+02	.476898
32	+175	3	660.9	664.8	.023350	1.6947E+02	.598701

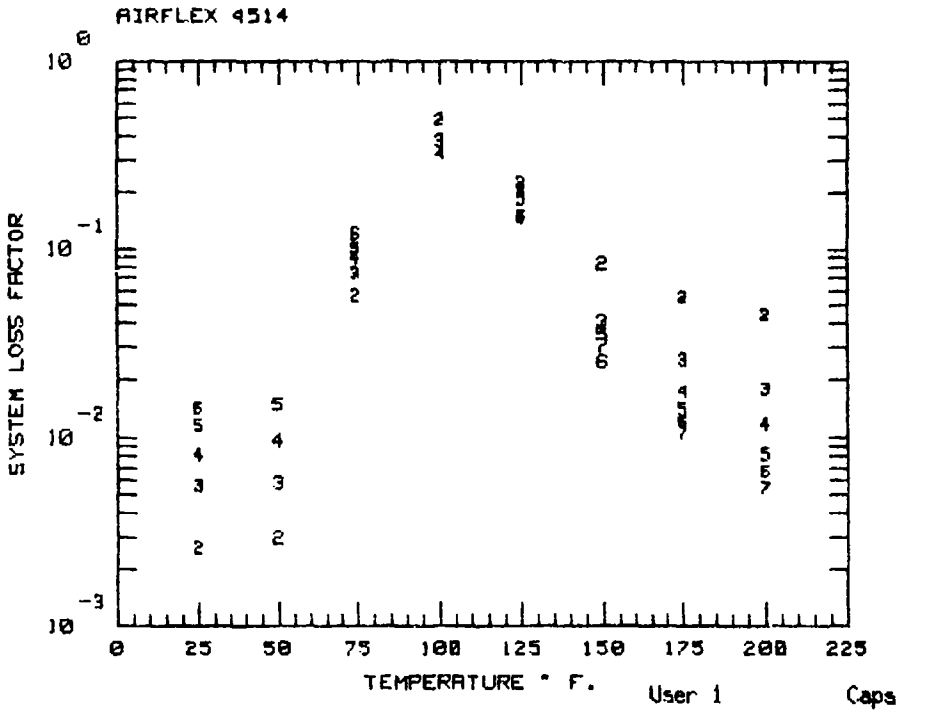
MATERIAL CODE: A4500
MATERIAL: 4500
MANUFACTURER: AIRFLEX
REMARKS: TESTED 1-16-87
DATE: 19 Jan 1987
ENTERED BY: TVG
BEAM MATERIAL: STAINLESS STEEL
BEAM NUMBER: 7-3 AND 7-7
BEAM TYPE: SANDWICH BEAM
BEAM LENGTH: 7 in
BEAM THICKNESS: .0591 in
BEAM DENSITY: .283 lb/cu in
DAMPING MATERIAL THICKNESS: .0239 in
DAMPING MATERIAL DENSITY: .0401 lb/cu in

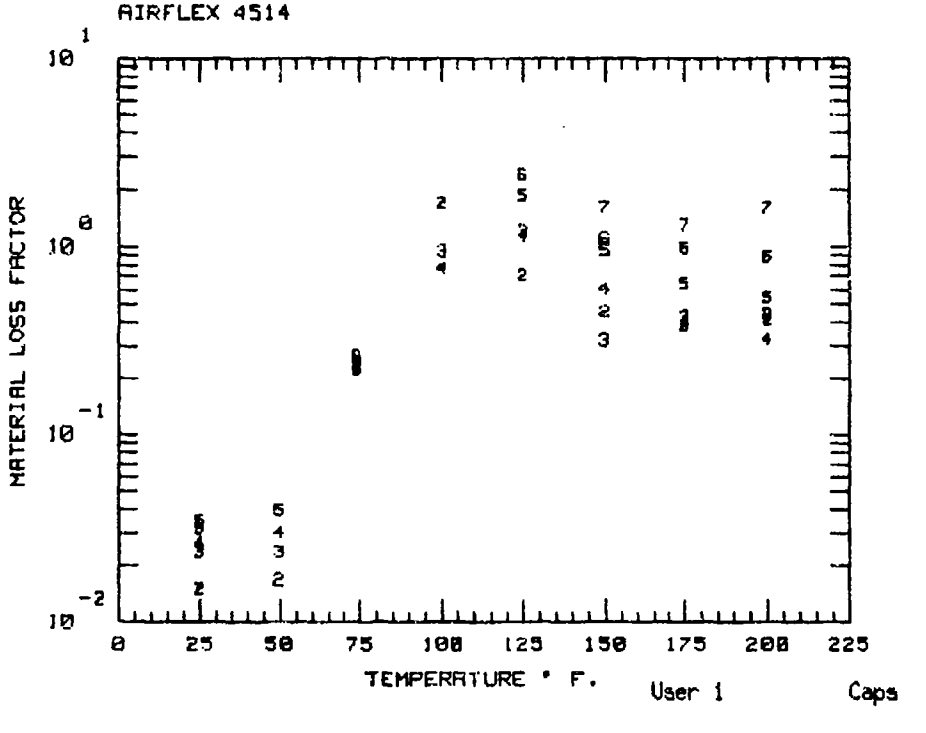
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	SHEAR MODULUS PSI	MATERIAL LOSS FACTOR
33	+175	4	1296.9	1294.2	.010170	1.9834E+02	.428495
34	+175	5	2149.6	2136.8	.004870	2.2106E+02	.302765
35	+175	6	3219.0	3191.2	.007990	2.2193E+02	.738768
36	+175	7	4493.6	4445.1	.005920	1.8463E+02	.910943
37	+200	2	236.5	240.5	.028150	9.4692E+01	.477034
38	+200	3	659.0	659.2	.013230	1.1980E+02	.469943
39	+200	4	1293.3	1285.9	.008360	1.3641E+02	.504316
40	+200	5	2143.7	2126.1	.006190	1.5817E+02	.531642
41	+200	6	3209.8	3176.1	.005720	1.4367E+02	.808235
42	+200	7	4481.0	4428.0	.003790	1.2467E+02	.856399

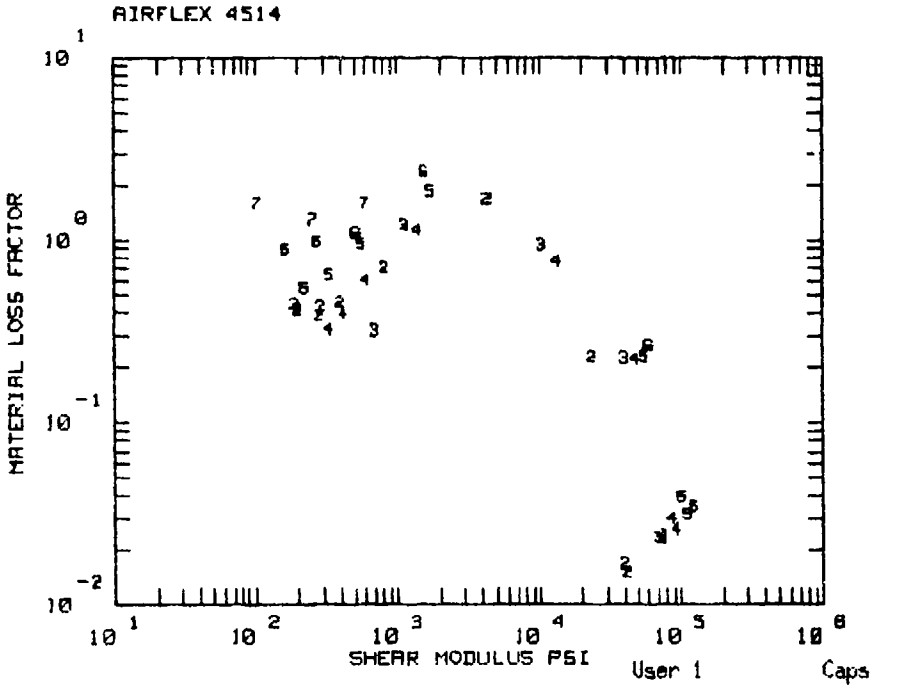

AIRFLEX 4514
TEMPERATURE DEG F (DELTA=25)
140
90
MODULUS
LOSS FACTOR
SHEAR MODULUS psi
FREQUENCY HERTZ
REDUCED FREQUENCY HERTZ


AIRFLEX 4514
FREQUENCY Hz
TEMPERATURE ° F.
User 1
Caps


AIRFLEX 4514
SHEAR MODULUS PSI
TEMPERATURE ° F.
User 1
Caps


AIRFLEX 4514
SYSTEM LOSS FACTOR
TEMPERATURE ° F.
User 1
Caps


AIRFLEX 4514
MATERIAL LOSS FACTOR
TEMPERRATURE ° F.
User 1
Caps



MATERIAL CODE: A4514
MATERIAL: 4514

UNITS ARE ENGLISH
LOG(M)=LOG(ML)+(2LOG(MROM/ML))/(1+(FQROM/FR)^SLOPE)

TZERO	FQROM	MROM	SLOPE	ML
250.0	2.000E+07	3.800E+03	0.450	1.500E+02

LOG(ETA)=LOG(ETFROL)+((SH+SL)A+(SL-SH)(1-SQR(1+A^2)))C/2

TZERO	ETFROL	SL	SH	FROL	C
250.0	1.500	.200	-.460	1.800E+07	.450

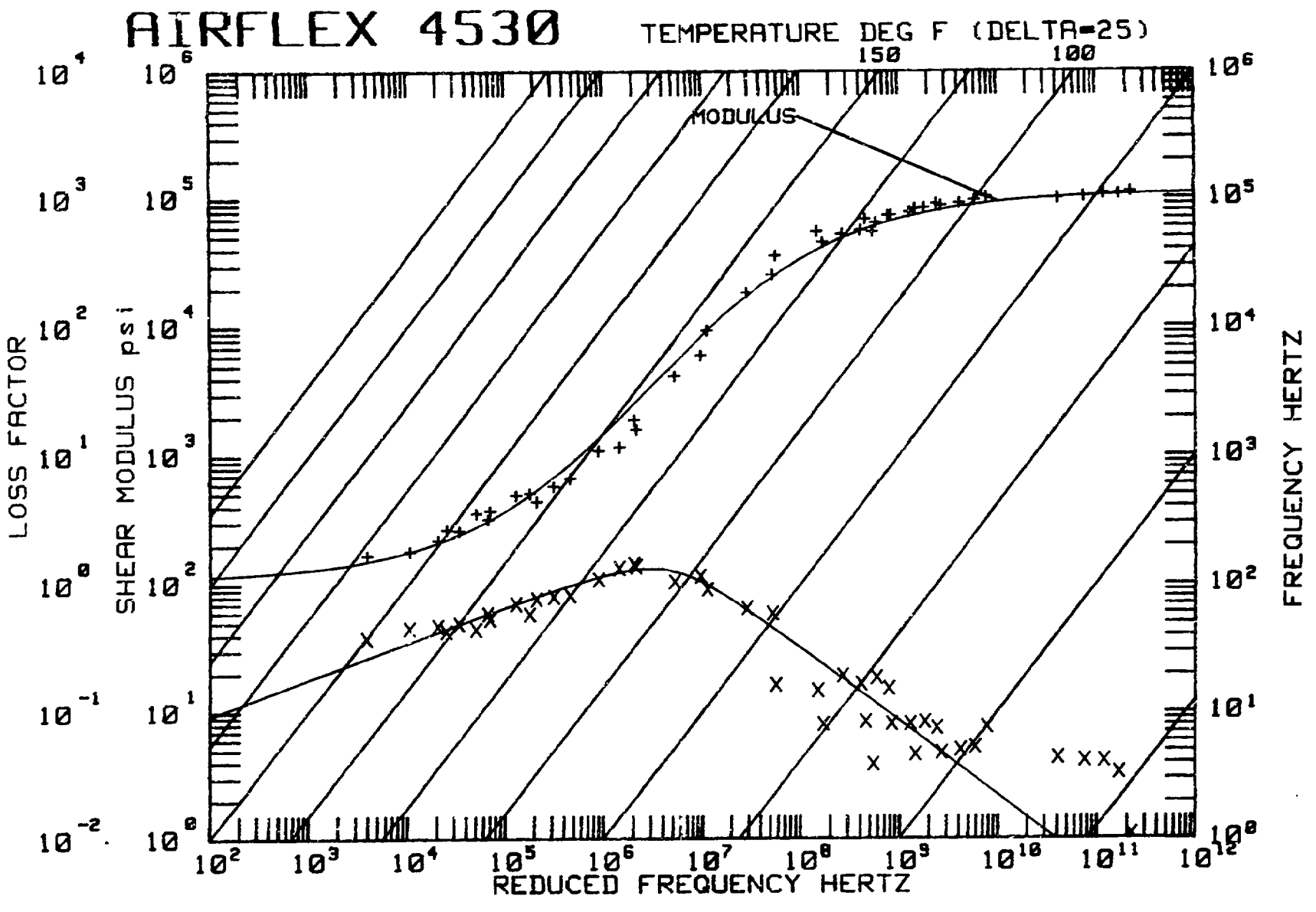
LOG(FR)=LOG(F)-12(T [illegible]/(525+T-T0)
A=(LOG(FR/[illegible]FROL[illegible])/C

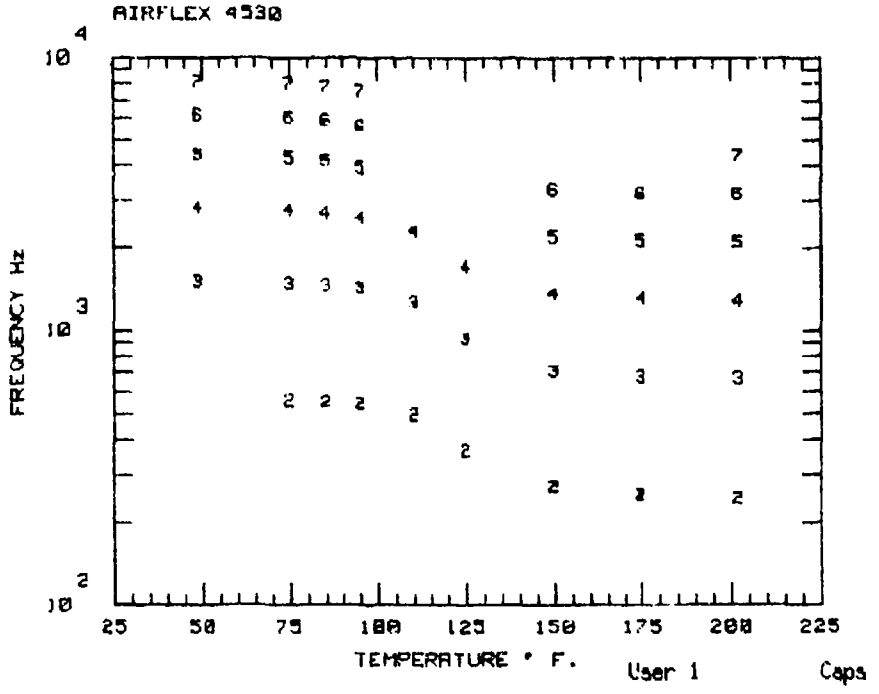
MATERIAL CODE: A4514
MATERIAL: 4514
MANUFACTURER: AIRFLEX
REMARKS: TESTED 1-15-87
DATE: 19 Jan 1987
ENTERED BY: TVG
BEAM MATERIAL: STAINLESS STEEL
BEAM NUMBER: 7-45 AND 7-34
BEAM TYPE: SANDWICH BEAM
BEAM LENGTH: 7 in
BEAM THICKNESS: .05945 in
BEAM DENSITY: .283 lb/cu in
DAMPING MATERIAL THICKNESS: .02826 in
DAMPING MATERIAL DENSITY: .04046 lb/cu in

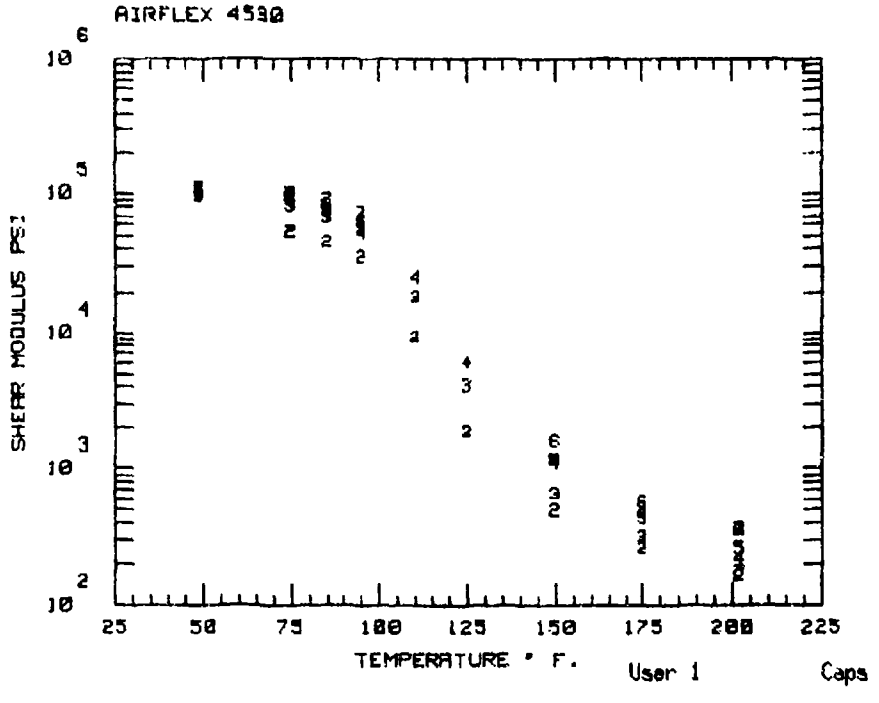
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	SHEAR MODULUS PSI	MATERIAL LOSS FACTOR
1	+25	2	242.5	592.9	.002610	4.1458E+04	.015074
2	+25	3	679.8	1589.4	.005590	7.5021E+04	.023617
3	+25	4	1336.7	2933.1	.008130	9.3165E+04	.026039
4	+25	5	2221.8	4605.0	.011590	1.1129E+05	.031636
5	+25	6	3332.4	6513.0	.014230	1.2411E+05	.034762
6	+50	2	241.8	589.9	.002950	4.0110E+04	.016685
7	+50	3	677.9	1573.2	.005780	7.0117E+04	.023448
8	+50	4	1332.4	2889.0	.009680	8.5896E+04	.029827
9	+50	5	2214.2	4516.9	.014920	1.0148E+05	.039347
10	+74	2	241.2	558.0	.056270	2.3417E+04	.227009
11	+74	3	676.2	1451.2	.074280	3.9624E+04	.224573
12	+74	4	1328.2	2600.6	.090060	4.7984E+04	.223243
13	+74	5	2206.8	4002.6	.100510	5.6270E+04	.227855
14	+74	6	3308.0	5545.8	.120630	6.0033E+04	.263404
15	+100	2	240.5	459.6	.485680	4.2936E+03	1.696008
16	+100	3	674.2	1141.0	.375810	1.0408E+04	.941086
17	+100	4	1323.7	1981.0	.320620	1.3335E+04	.768429
18	+125	2	239.9	287.5	.207300	8.1836E+02	.708406
19	+125	3	672.3	740.0	.224320	1.1306E+03	1.218054
20	+125	4	1319.3	1396.0	.147420	1.3977E+03	1.142629
21	+125	5	2191.3	2281.0	.184220	1.7226E+03	1.848890
22	+125	6	3282.5	3343.0	.149570	1.5491E+03	2.370150
23	+150	2	239.2	262.0	.083590	3.9817E+02	.451377
24	+150	3	670.5	707.4	.040710	6.9594E+02	.318426
25	+150	4	1315.0	1336.0	.037130	5.9999E+02	.597392
26	+150	5	2183.7	2188.0	.034510	5.6330E+02	.950967
27	+150	6	3270.1	3253.0	.024750	5.1561E+02	1.099542
28	+150	7	4557.4	4525.4	.030270	5.9935E+02	1.598169
29	+175	2	238.6	254.2	.055070	2.8460E+02	.383557
30	+175	3	668.6	678.2	.025360	2.8882E+02	.427582
31	+175	4	1310.7	1318.9	.017360	4.1649E+02	.389702
32	+175	5	2176.0	2163.9	.014000	3.3055E+02	.639969

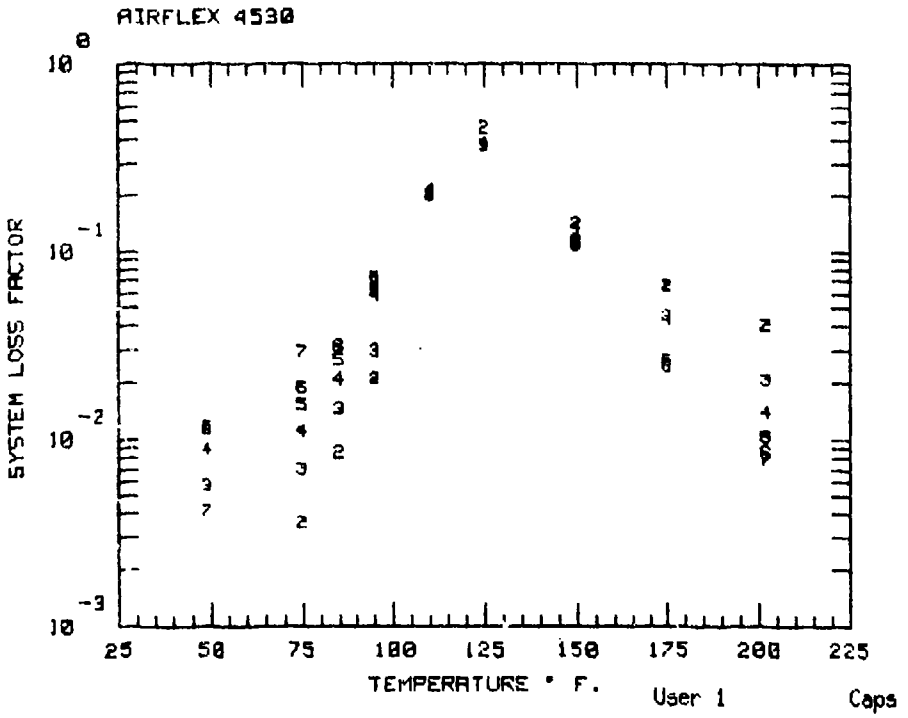
MATERIAL CODE: A4514
MATERIAL: 4514
MANUFACTURER: AIRFLEX
REMARKS: TESTED 1-15-87
DATE: 19 Jan 1987
ENTERED BY: TVG
BEAM MATERIAL: STAINLESS STEEL
BEAM NUMBER: 7-45 AND 7-34
BEAM TYPE: SANDWICH BEAM
BEAM LENGTH: 7 in
BEAM THICKNESS: .05945 in
BEAM DENSITY: .283 lb/cu in
DAMPING MATERIAL THICKNESS: .02826 in
DAMPING MATERIAL DENSITY: .04046 lb/cu in

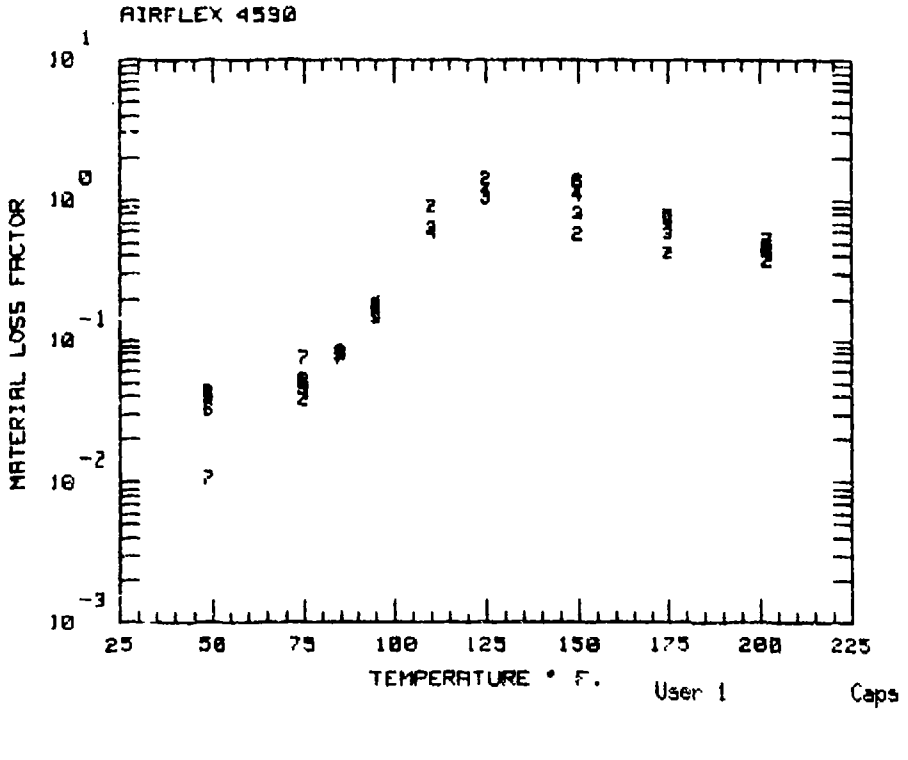
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	SHEAR MODULUS PSI	MATERIAL LOSS FACTOR
33	+175	6	3257.6	3223.5	.012000	2.7457E+02	.979832
34	+175	7	4545.0	4488.3	.010670	2.5521E+02	1.296952
35	+200	2	237.9	248.1	.044340	2.0099E+02	.410165
36	+200	3	666.8	669.5	.017830	1.9081E+02	.440533
37	+200	4	1306.3	1308.8	.011770	3.3335E+02	.324169
38	+200	5	2168.4	2148.7	.008130	2.2284E+02	.542342
39	+200	6	3245.1	3203.3	.006618	1.6412E+02	.891405
40	+200	7	4532.7	4465.2	.005460	1.0420E+02	1.606374

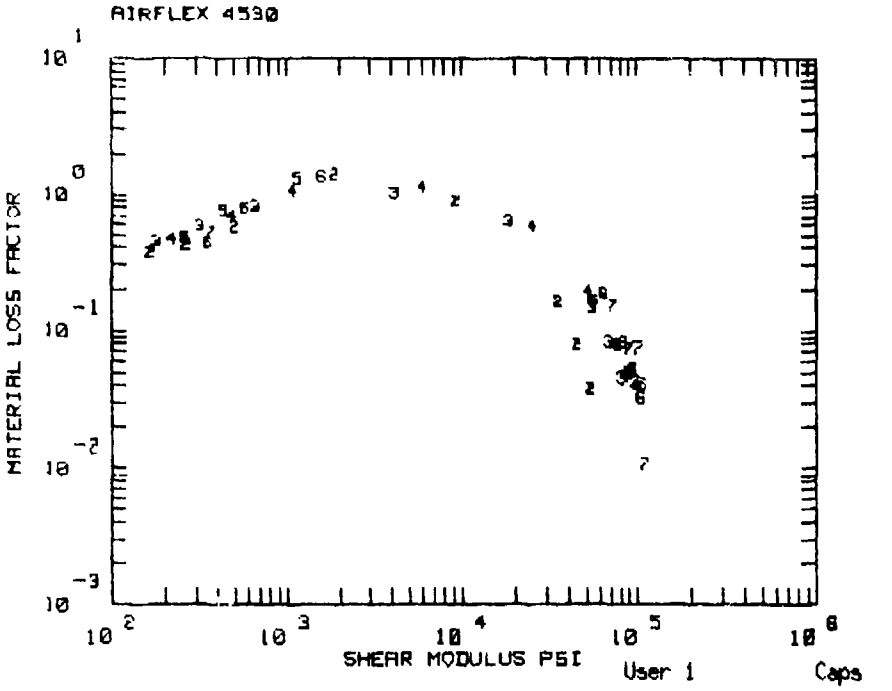

AIRFLEX 4530
TEMPERATURE DEG F (DELTA=25)
150
100
MODULUS
LOSS FACTOR
SHEAR MODULUS psi
FREQUENCY HERTZ
REDUCED FREQUENCY HERTZ
10^{-2}
10^{-1}
10^{0}
10^{1}
10^{2}
10^{3}
10^{4}
10^{5}
10^{6}
10^{7}
10^{8}
10^{9}
10^{10}
10^{11}
10^{12}


AIRFLEX 4530
FREQUENCY Hz
TEMPERATURE ° F.
User 1
Caps


AIRFLEX 4590
SHEAR MODULUS PSI
TEMPERATURE ° F.
User 1
Caps


AIRFLEX 4530
SYSTEM LOSS FACTOR
TEMPERATURE ° F.
User 1
Caps


AIRFLEX 4590
MATERIAL LOSS FACTOR
TEMPERATURE ° F.
User 1
Caps



MATERIAL CODE: A4530
MATERIAL: 4530

UNITS ARE ENGLISH
LOG(M)=LOG(ML)+(2LOG(MROM/ML))/(1+(FQROM/FR)^SLOPE)

TZERO	FQROM	MROM	SLOPE	ML
250.0	3.000E+06	3.500E+03	0.450	1.100E+02

LOG(ETA)=LOG(ETFROL)+((SH+SL)A+(SL-SH)(1-SQR(1+A^2)))C/2

TZERO	ETFROL	SL	SH	FROL	C
250.0	1.300	.290	-.590	4.500E+06	.500

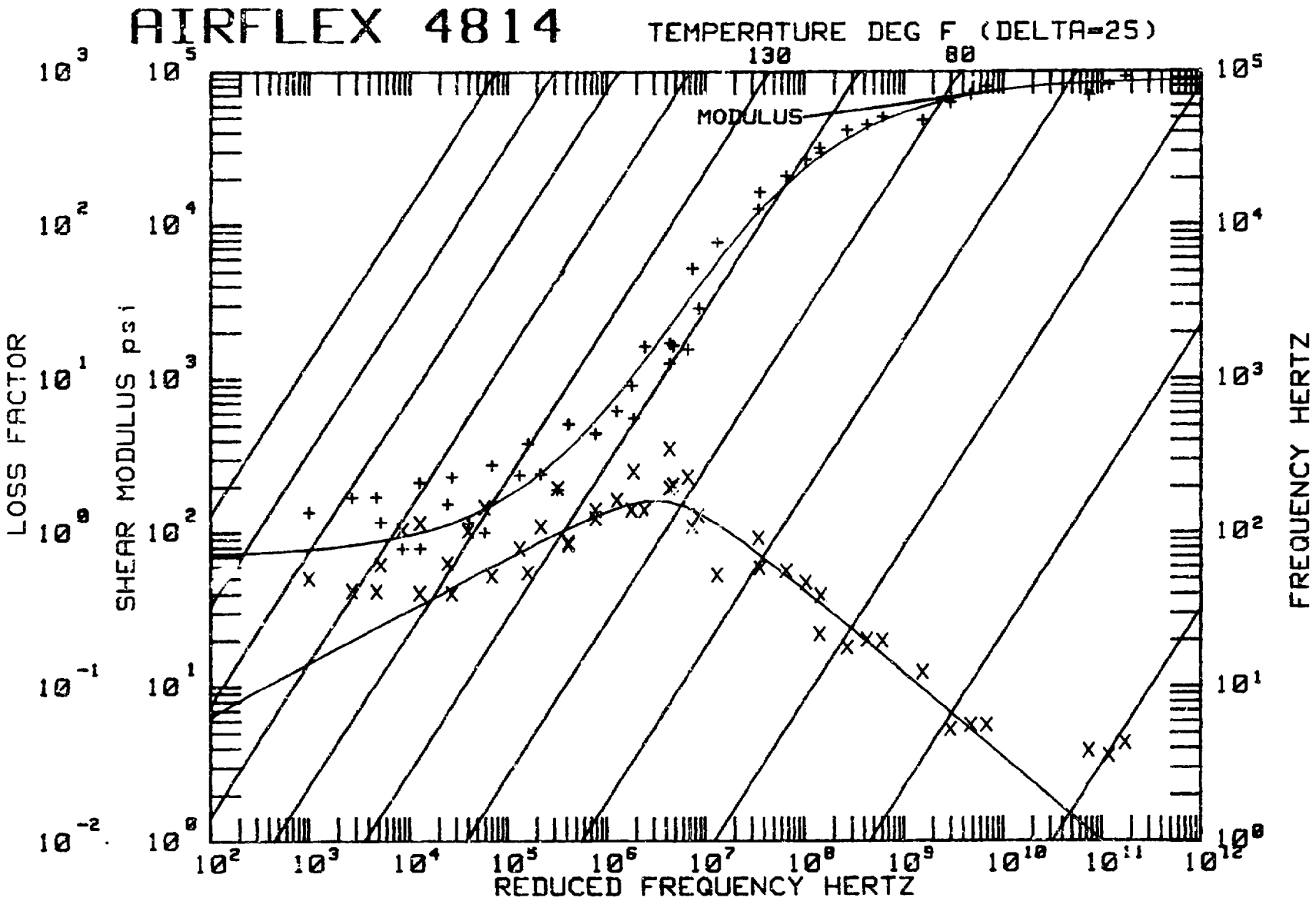
LOG(FR)=LOG(F)-12(T-T0)/(525+T-T0)
A=(LOG(FR)-LOG(FROL))/C

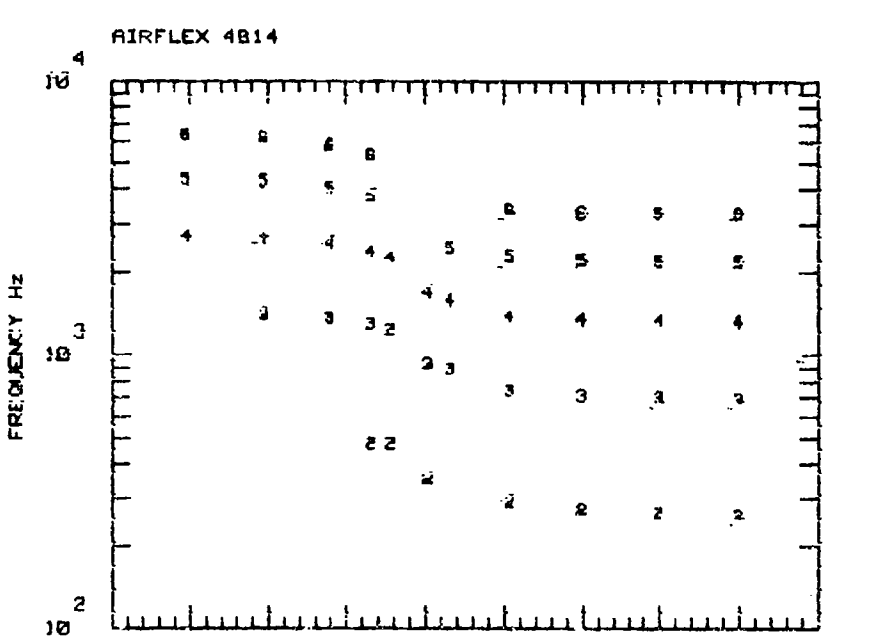
MATERIAL CODE: A4530
MATERIAL: 4530
MANUFACTURER: AIRFLEX
REMARKS:
DATE: 24 Nov 1986
ENTERED BY: GJF
BEAM MATERIAL: STAINLESS STEEL
BEAM NUMBER: SS-7-04 & SS-7-06
BEAM TYPE: SANDWICH BEAM
BEAM LENGTH: 7 in
BEAM THICKNESS: .05925 in
BEAM DENSITY: .283 lb/cu in
DAMPING MATERIAL THICKNESS: .01882 in
DAMPING MATERIAL DENSITY: .04697 lb/cu in

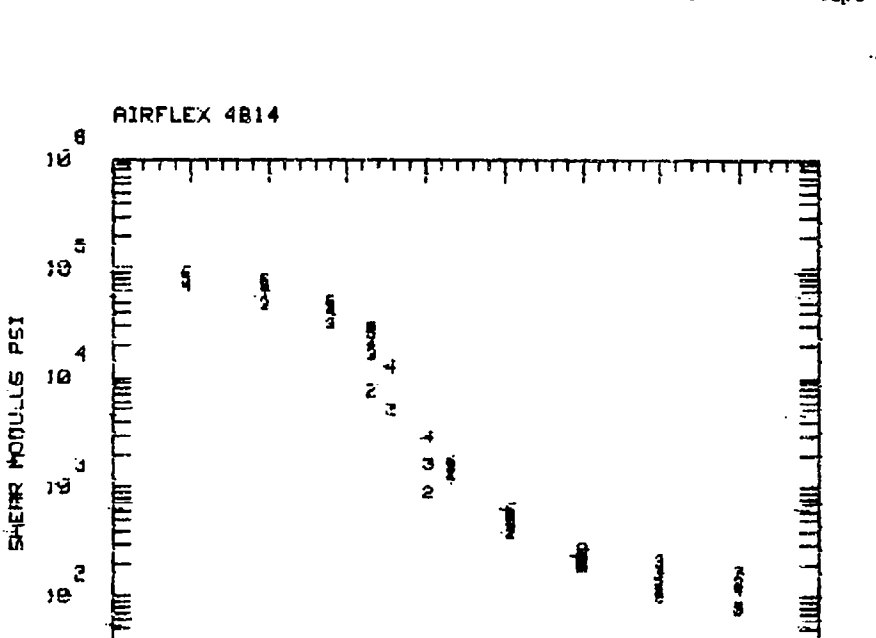
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	SHEAR MODULUS PSI	MATERIAL LOSS FACTOR
1	+49	3	661.5	1511.5	.005690	9.8099E+04	.042855
2	+49	4	1301.6	2811.1	.008820	1.0080E+05	.040869
3	+49	5	2153.6	4391.0	.011570	1.0541E+05	.040548
4	+49	6	3220.0	6155.0	.011320	1.0514E+05	.032712
5	+49	7	4496.1	8151.0	.004100	1.0967E+05	.010706
6	+75	2	237.2	555.0	.003570	5.3817E+04	.038247
7	+75	3	660.6	1490.3	.006960	8.1899E+04	.045563
8	+75	4	1298.9	2758.0	.011170	8.6414E+04	.046968
9	+75	5	2148.8	4285.2	.015310	9.0353E+04	.049690
10	+75	6	3212.3	6036.0	.018720	9.4882E+04	.052136
11	+75	7	4485.8	8007.0	.029350	1.0052E+05	.075045
12	+85	2	237.0	549.5	.008590	4.4798E+04	.079131
13	+85	3	660.2	1467.5	.014510	6.8010E+04	.082893
14	+85	4	1297.8	2700.0	.020930	7.3080E+04	.079765
15	+85	5	2147.0	4178.3	.026350	7.7271E+04	.079729
16	+85	6	3209.3	5886.0	.030920	8.2858E+04	.082397
17	+85	7	4481.9	7816.0	.029670	8.9276E+04	.073753
18	+95	2	236.8	541.9	.021020	3.5407E+04	.162294
19	+95	3	659.8	1438.0	.029620	5.4571E+04	.146166
20	+95	4	1296.8	2575.0	.059180	5.1895E+04	.191068
21	+95	5	2145.1	3949.0	.060780	5.5784E+04	.163823
22	+95	6	3206.4	5602.0	.073370	6.3795E+04	.183991
23	+95	7	4477.9	7496.0	.062700	7.2582E+04	.151021
24	+110	2	236.4	493.0	.202840	9.2679E+03	.902919
25	+110	3	659.2	1268.4	.200330	1.8390E+04	.643129
26	+110	4	1295.2	2308.0	.212740	2.5260E+04	.584161
27	+125	2	236.0	367.0	.460510	1.8957E+03	1.411867
28	+125	3	658.7	936.0	.369520	4.1358E+03	1.036202
29	+125	4	1293.6	1726.0	.378910	5.9801E+03	1.146623
30	+150	2	235.4	271.6	.141100	5.0231E+02	.578546
31	+150	3	657.7	705.0	.116310	6.6086E+02	.809359
32	+150	4	1290.9	1368.0	.134500	1.0883E+03	1.080289

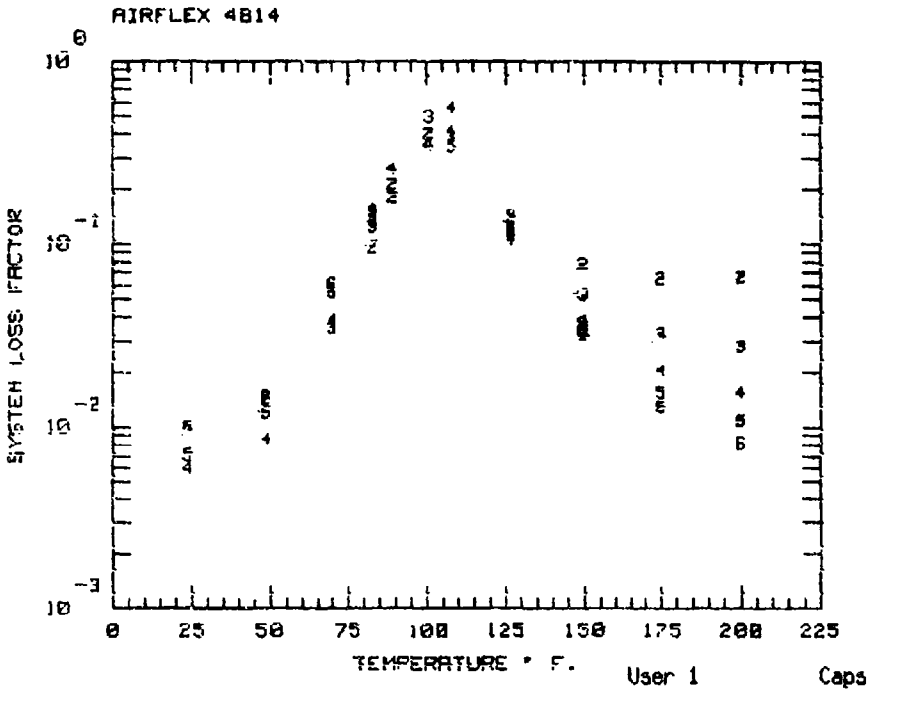
MATERIAL CODE: A4530
MATERIAL: 4530
MANUFACTURER: AIRFLEX
REMARKS:
DATE: 24 Nov 1986
ENTERED BY: GJF
BEAM MATERIAL: STAINLESS STEEL
BEAM NUMBER: SS-7-04 & SS-7-06
BEAM TYPE: SANDWICH BEAM
BEAM LENGTH: 7 in
BEAM THICKNESS: .05925 in
BEAM DENSITY: .283 lb/cu in
DAMPING MATERIAL THICKNESS: .01882 in
DAMPING MATERIAL DENSITY: .04697 lb/cu in

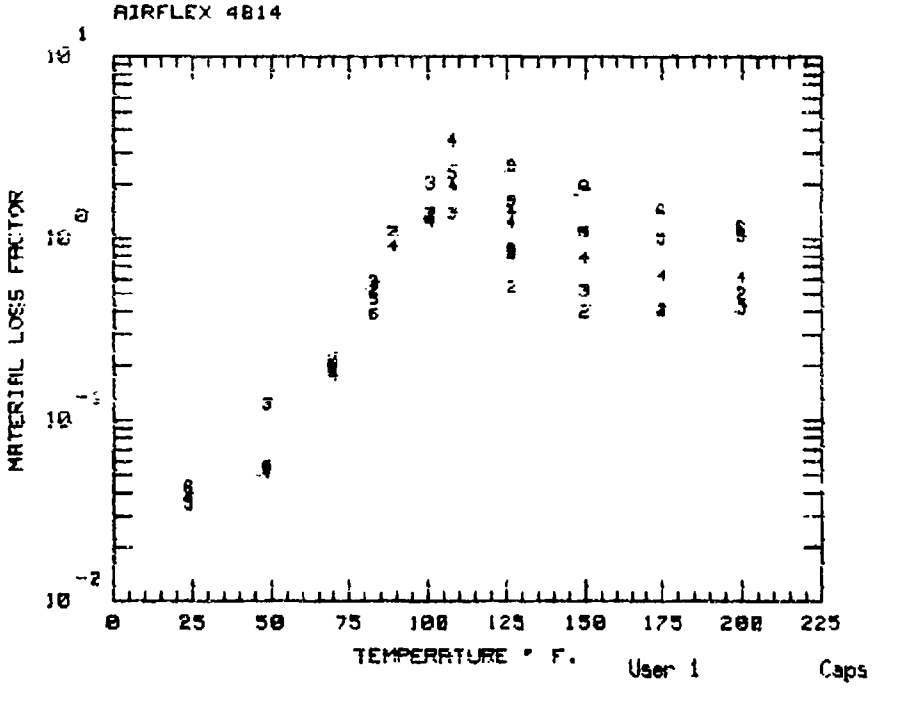
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	SHEAR MODULUS PSI	MATERIAL LOSS FACTOR
33	+150	5	2134.9	2209.7	.113590	1.1631E+03	1.319980
34	+150	6	3190.0	3289.0	.108240	1.5918E+03	1.361173
35	+175	2	234.8	253.4	.066300	2.6162E+02	.424473
36	+175	3	656.8	675.8	.045430	3.1813E+02	.582206
37	+175	4	1288.3	1314.0	.043380	4.8606E+02	.696813
38	+175	5	2130.3	2141.0	.026530	4.3381E+02	.757706
39	+175	6	3182.6	3192.0	.024590	5.7320E+02	.791046
40	+202	2	234.2	245.2	.040380	1.6534E+02	.372632
41	+202	3	655.7	662.9	.020670	1.7813E+02	.448591
42	+202	4	1285.4	1288.1	.013820	2.1848E+02	.467862
43	+202	5	2125.3	2120.7	.010370	2.5804E+02	.485743
44	+202	6	3174.6	3164.8	.008590	3.5261E+02	.439491
45	+202	7	4435.5	4411.0	.007800	3.6907E+02	.528271

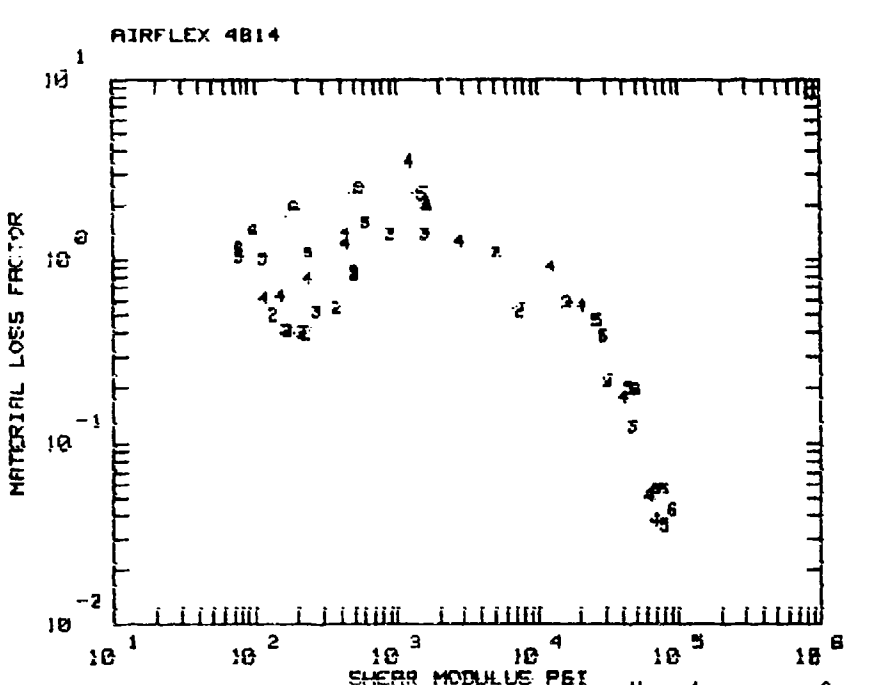

AIRFLEX 4814
TEMPERATURE DEG F (DELTA=25)
130
80
MODULUS
LOSS FACTOR
SHEAR MODULUS psi
FREQUENCY HERTZ
REDUCED FREQUENCY HERTZ
10^{3}
10^{2}
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{5}
10^{4}
10^{3}
10^{2}
10^{1}
10^{0}
10^{2} 10^{3} 10^{4} 10^{5} 10^{6} 10^{7} 10^{8} 10^{9} 10^{10} 10^{11} 10^{12}


AIRFLEX 4B14
FREQUENCY Hz
TEMPERATURE ° F.
User 1
Caps


AIRFLEX 4B14
SHEAR MODULUS PSI
TEMPERATURE ° F.
User 1
Caps


AIRFLEX 4814
SYSTEM LOSS FACTOR
TEMPERATURE ° F.
0
25
50
75
100
125
150
175
200
225
User 1
Caps


AIRFLEX 4814
MATERIAL LOSS FACTOR
TEMPERATURE ° F.
0
25
50
75
100
125
150
175
200
225
User 1
Caps



MATERIAL CODE: A4814
MATERIAL: AIRFLEX 4814

UNITS ARE ENGLISH
LOG(M)=LOG(ML)+(2LOG(MROM/ML))/(1+(FQROM/FR)^SLOPE)

TZERO	FQROM	MROM	SLOPE	ML
225.0	5.000E+06	2.500E+03	0.490	7.000E+01

LOG(ETA)=LOG(ETFROL)+((SH+SL)A+(SL-SH)(1-SQR(1+A^2)))C/2

TZERO	ETFROL	SL	SH	FROL	C
225.0	1.600	.350	-.550	4.000E+06	.500

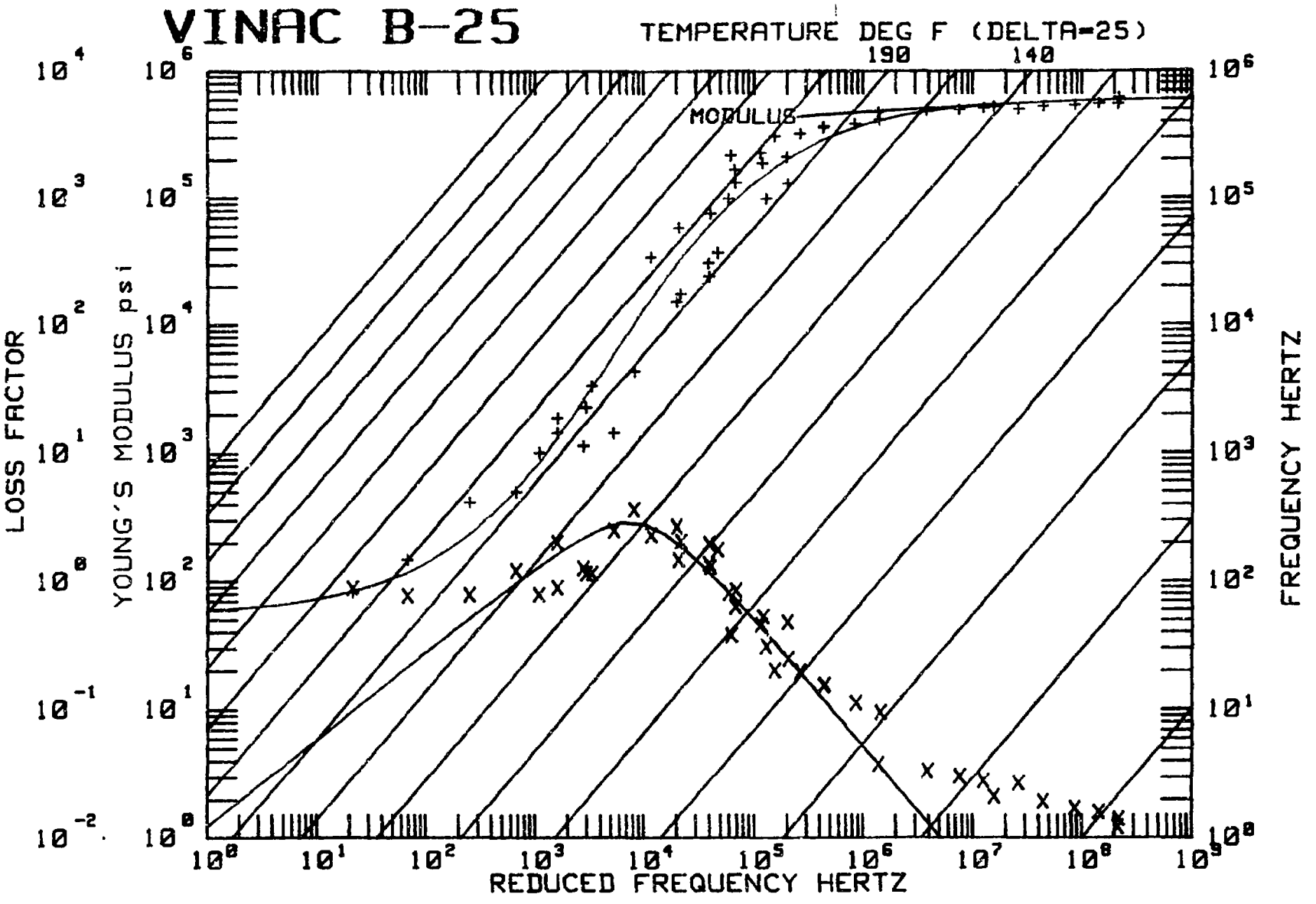
LOG(FR)=LOG(F)-12(T-T0)/(525+T-T0)
A=(LOG(FR)-LOG(FROL))/C

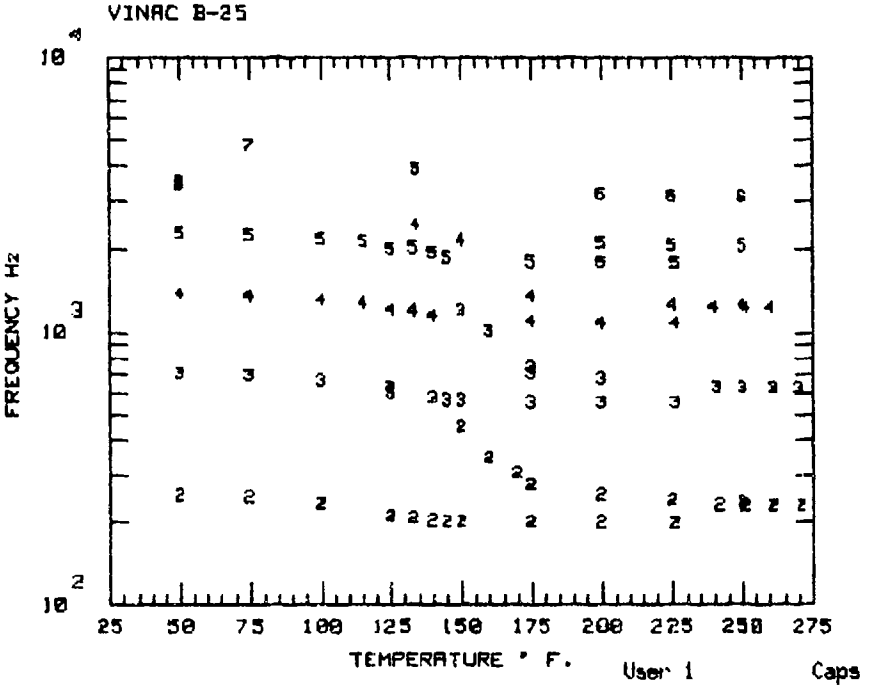
MATERIAL CODE: A4814
MATERIAL: AIRFLEX 4814
MANUFACTURER: AIR PRODUCTS AND CHEMICALS INC.
REMARKS: TEST 2 MATL PRESSED ON
DATE: 24 Nov 1986
ENTERED BY: GJF
BEAM MATERIAL: STAINLESS STEEL
BEAM NUMBER: SS-7-33 & SS-7-42
BEAM TYPE: SANDWICH BEAM
BEAM LENGTH: 7 in
BEAM THICKNESS: .05964 in
BEAM DENSITY: .283 lb/cu in
DAMPING MATERIAL THICKNESS: .00831 in
DAMPING MATERIAL DENSITY: .03874 lb/cu in

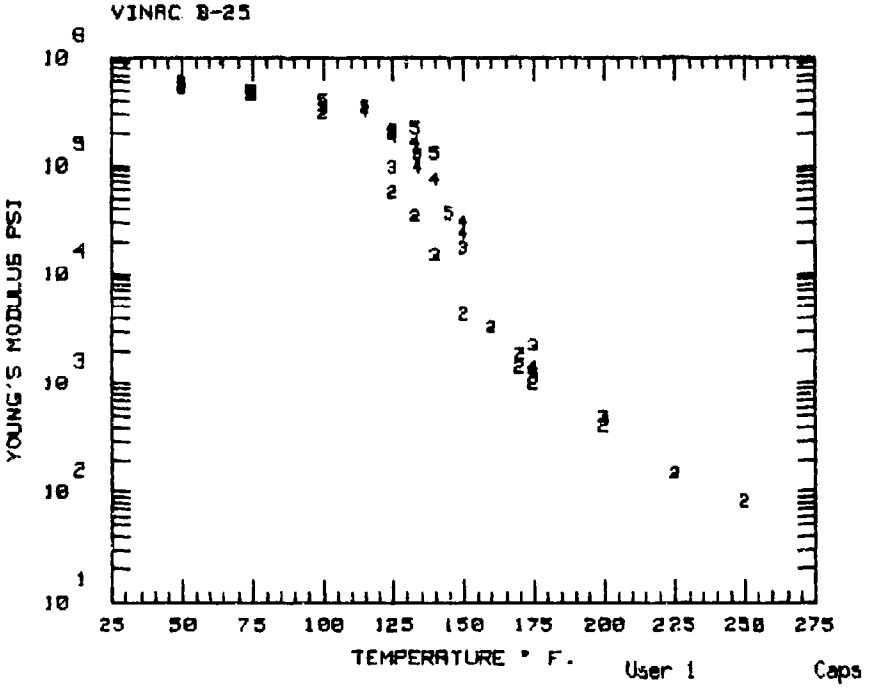
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	SHEAR MODULUS PSI	MATERIAL LOSS FACTOR
1	+24	4	1345.1	2707.5	.005910	6.8244E+04	.037950
2	+24	5	2228.5	4347.0	.007040	7.9533E+04	.035240
3	+24	6	3329.5	6308.0	.010110	9.1068E+04	.042843
4	+49	3	681.4	1403.0	.014800	4.7174E+04	.122956
5	+49	4	1341.2	2680.6	.008680	6.2078E+04	.052267
6	+49	5	2222.0	4278.0	.012060	6.9632E+04	.055700
7	+49	6	3320.0	6175.0	.014350	7.7892E+04	.055927
8	+70	3	679.7	1362.4	.034760	3.1274E+04	.216217
9	+70	4	1337.9	2574.0	.038230	4.0668E+04	.176899
10	+70	5	2216.6	4050.0	.054200	4.4315E+04	.198844
11	+70	6	3312.0	5797.0	.060720	4.9725E+04	.195868
12	+83	2	242.9	476.4	.095720	7.6017E+03	.521426
13	+83	3	678.7	1296.0	.123150	1.6086E+04	.579850
14	+83	4	1335.8	2396.0	.151840	2.0498E+04	.555638
15	+83	5	2213.3	3775.0	.146750	2.6101E+04	.465640
16	+83	6	3307.1	5320.0	.134590	2.9048E+04	.385150
17	+89	2	242.7	475.3	.177360	5.1510E+03	1.084384
18	+89	2	242.7	1238.6	.211450	0.0000E+00	0.000000
19	+89	4	1334.9	2263.7	.259000	1.2444E+04	.908505
20	+101	2	242.4	351.5	.402000	8.9672E+02	1.394291
21	+101	3	677.3	931.0	.496240	1.6305E+03	2.031431
22	+101	4	1333.0	1703.0	.350560	2.8373E+03	1.271125
23	+108	3	676.7	880.0	.386400	1.6089E+03	1.387214
24	+108	4	1331.9	1594.0	.554580	1.2430E+03	3.488359
25	+108	4	1331.9	1594.0	.410550	1.6858E+03	1.949382
26	+108	5	2206.8	2452.0	.340130	1.5423E+03	2.293896
27	+127	2	241.6	287.5	.140520	3.7779E+02	.540169
28	+127	3	675.2	742.0	.140160	5.0305E+02	.856550
29	+127	3	675.2	742.0	.135070	5.0448E+02	.823237
30	+127	4	1328.9	1387.0	.105270	4.3961E+02	1.232835
31	+127	4	1328.9	1387.0	.117520	4.3554E+02	1.388834
32	+127	5	2201.9	2283.0	.118260	6.1252E+02	1.616474

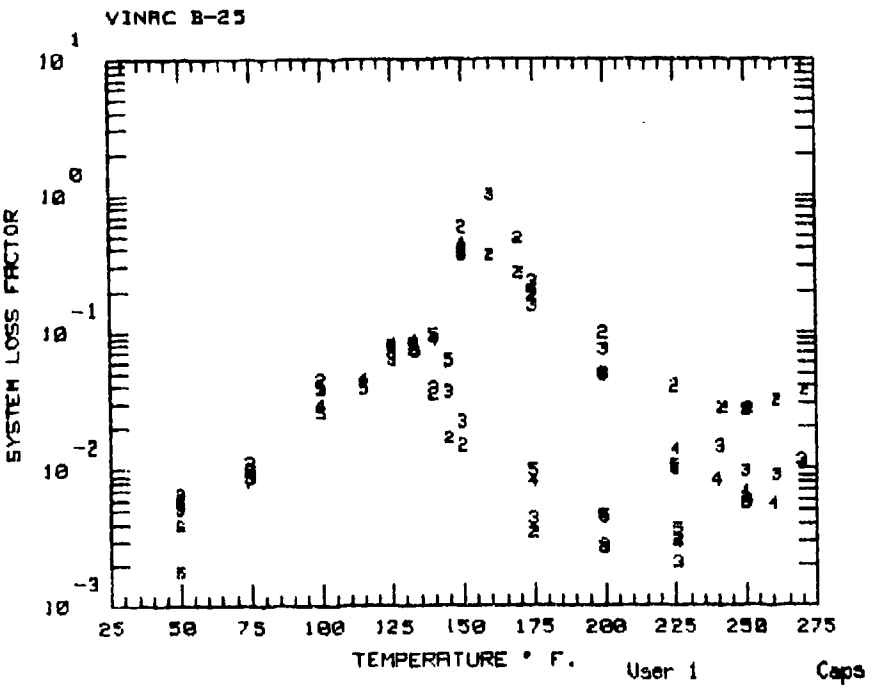
MATERIAL CODE: A4814
MATERIAL: AIRFLEX 4814
MANUFACTURER: AIR PRODUCTS AND CHEMICALS INC.
REMARKS: TEST 2 MATL PRESSED ON
DATE: 24 Nov 1986
ENTERED BY: GJF
BEAM MATERIAL: STAINLESS STEEL
BEAM NUMBER: SS-7-33 & SS-7-42
BEAM TYPE: SANDWICH BEAM
BEAM LENGTH: 7 in
BEAM THICKNESS: .05964 in
BEAM DENSITY: .283 lb/cu in
DAMPING MATERIAL THICKNESS: .00831 in
DAMPING MATERIAL DENSITY: .03974 lb/cu in

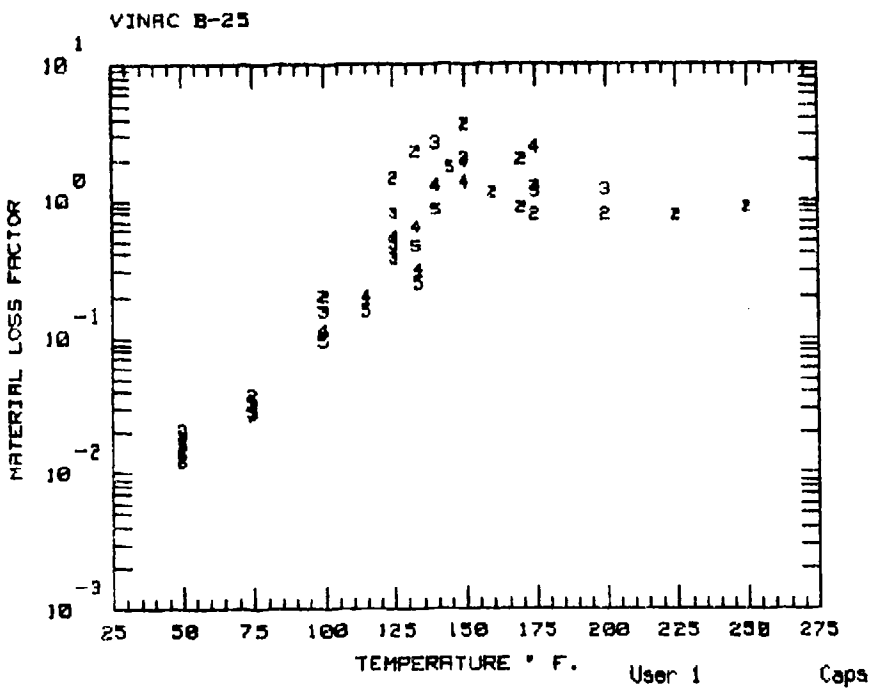
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	SHEAR MODULUS PSI	MATERIAL LOSS FACTOR
33	+127	6	3290.4	3360.0	.114580	5.5081E+02	2.487766
34	+150	2	240.9	270.1	.077750	2.2934E+02	.397919
35	+150	3	673.4	708.9	.052760	2.7255E+02	.515683
36	+150	4	1325.3	1353.4	.038350	2.3566E+02	.778972
37	+150	5	2196.0	2220.7	.033820	2.3949E+02	1.089401
38	+150	6	3281.7	3294.0	.032480	1.8896E+02	1.941313
39	+175	2	240.2	262.1	.064860	1.6873E+02	.409791
40	+175	3	671.4	698.5	.032930	2.1072E+02	.398690
41	+175	4	1321.4	1337.4	.020490	1.5178E+02	.624987
42	+175	5	2189.5	2196.0	.015570	1.1506E+02	1.011986
43	+175	6	3272.2	3271.0	.012930	9.8668E+01	1.453297
44	+200	2	239.4	257.1	.066120	1.3439E+02	.494368
45	+200	3	669.5	690.6	.027960	1.6748E+02	.412363
46	+200	4	1317.5	1328.3	.015510	1.1577E+02	.609316
47	+200	5	2183.1	2184.1	.010900	7.7817E+01	1.033557
48	+200	6	3262.7	3258.5	.008130	7.7954E+01	1.146689

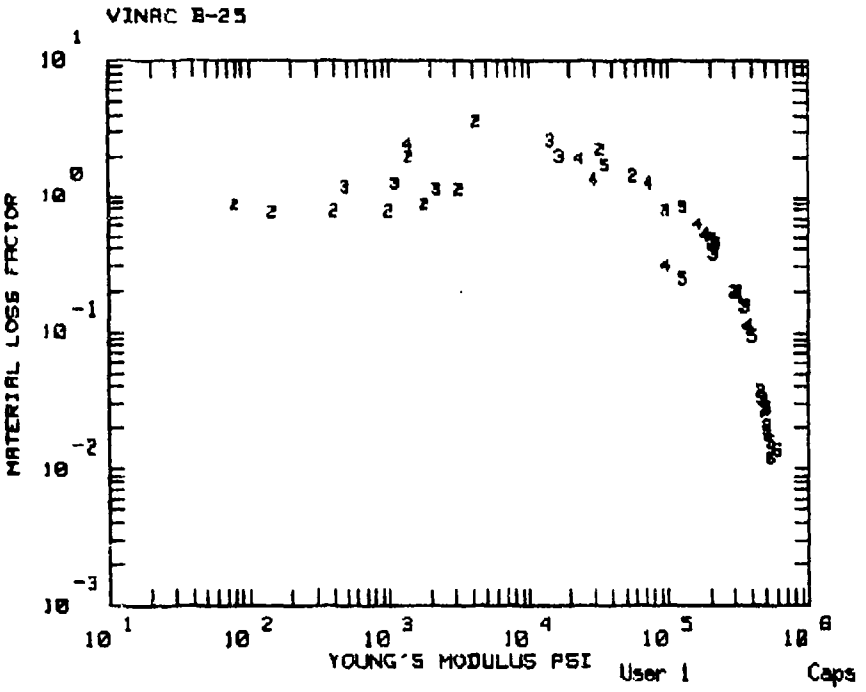

VINAC B-25
TEMPERATURE DEG F (DELTA-25)
190
140
MODULUS
LOSS FACTOR
YOUNG'S MODULUS psi
FREQUENCY HERTZ
REDUCED FREQUENCY HERTZ


VINAC B-25
FREQUENCY Hz
10^4
10^3
10^2
25 50 75 100 125 150 175 200 225 250 275
TEMPERATURE ° F.
User 1
Caps


VINAC B-25
YOUNG'S MODULUS PSI
10^6
10^5
10^4
10^3
10^2
10^1
25 50 75 100 125 150 175 200 225 250 275
TEMPERATURE ° F.
User 1
Caps


VINAC B-25
SYSTEM LOSS FACTOR
10^1
10^0
10^-1
10^-2
10^-3
25 50 75 100 125 150 175 200 225 250 275
TEMPERATURE ° F.
User 1
Caps


VINAC B-25
MATERIAL LOSS FACTOR
10^1
10^0
10^-1
10^-2
10^-3
25 50 75 100 125 150 175 200 225 250 275
TEMPERATURE ° F.
User 1
Caps



MATERIAL CODE: CM0510
MATERIAL: 880210-1

UNITS ARE ENGLISH
LOG(M)=LOG(ML)+(2LOG(MROM/ML))/(1+(FQROM/FR)^SLOPE)

TZERO	FQROM	MROM	SLOPE	ML
200.0	5.279E+03	5.794E+03	0.552	5.496E+01

LOG(ETA)=LOG(ETFROL)+((SH+SL)A+(SL-SH)(1-SQR(1+A^2)))C/2

TZERO	ETFROL	SL	SH	FROL	C
200.0	2.870	.690	-1.020	9.019E+03	.450

LOG(FR)=LOG(F)-12(T-T0)/(525+T-T0)
A=(LOG(FR)-LOG(FROL))/C

MATERIAL CODE: CM0510
MATERIAL: 880210-1
MANUFACTURER: UDRI
REMARKS: COMBINED DATA
DATE: 30 Aug 1988
ENTERED BY: DGA
BEAM MATERIAL: ALUMINUM
BEAM NUMBER: AL-060-6
BEAM TYPE: FREE LAYER ONE SIDE
BEAM LENGTH: 7 in
BEAM THICKNESS: .06 in
BEAM DENSITY: .1 lb/cu in
DAMPING MATERIAL THICKNESS: .05224 in
DAMPING MATERIAL DENSITY: .0445844 lb/cu in

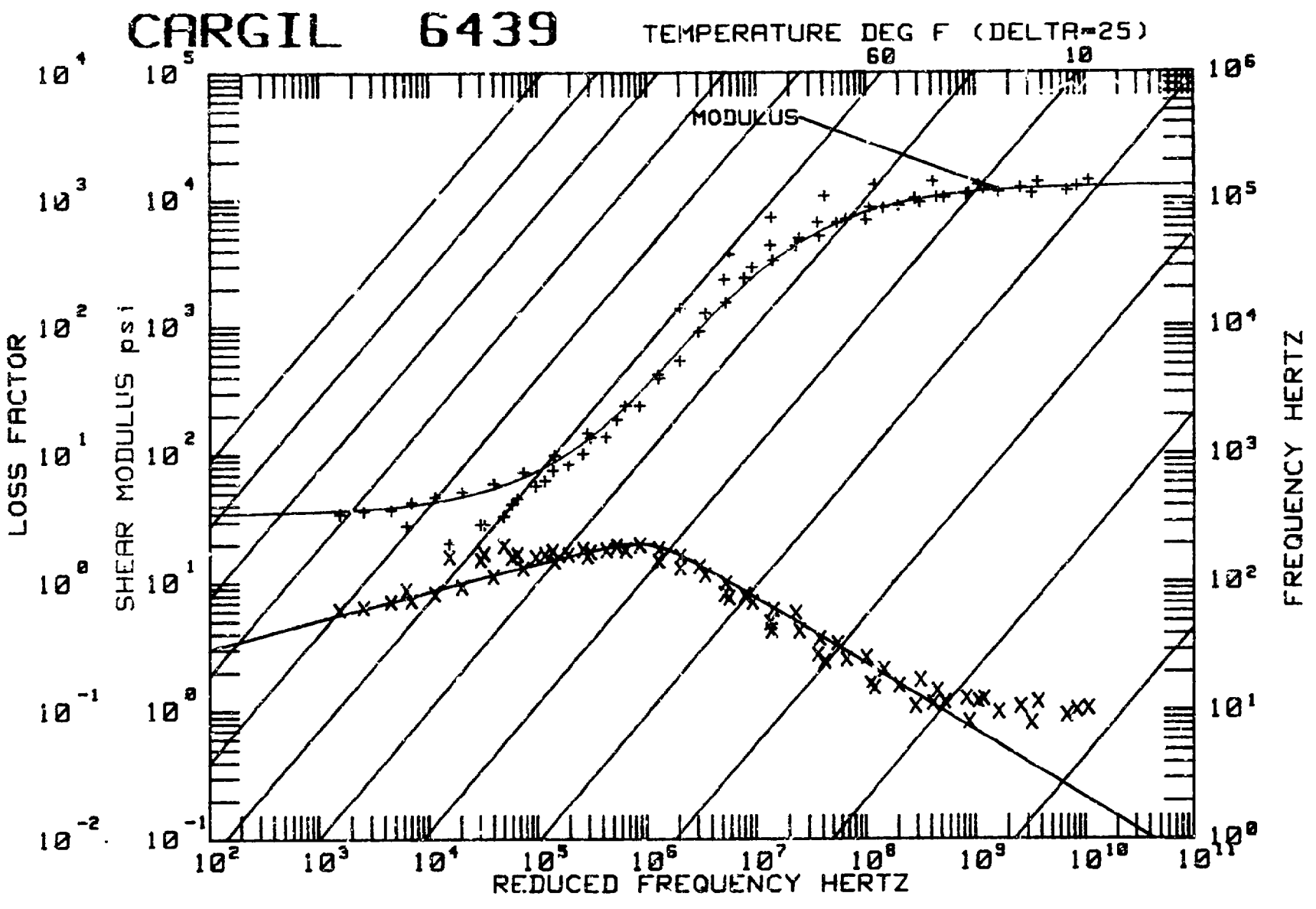
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	YOUNG'S MODULUS PSI	MATERIAL LOSS FACTOR
1	+50	2	243.5	251.8	.006550	5.1395E+05	.020926
2	+50	3	681.0	705.2	.006050	5.1776E+05	.019214
3	+50	4	1333.3	1385.7	.005420	5.2914E+05	.016970
4	+50	5	2208.5	2304.1	.005130	5.4450E+05	.015835
5	+50	6	3312.3	3448.1	.003870	5.4304E+05	.012043
6	+50	6	3312.3	3511.1	.001780	6.0565E+05	.013982
7	+75	2	242.6	247.2	.011000	4.6340E+05	.037305
8	+75	3	678.7	693.6	.009930	4.7229E+05	.033230
9	+75	4	1328.2	1364.2	.009210	4.8679E+05	.030198
10	+75	5	2199.5	2269.0	.008640	5.0260E+05	.027838
11	+75	7	4625.6	4743.0	.008140	4.9089E+05	.026871
12	+100	2	241.7	233.4	.044260	3.0290E+05	.199670
13	+100	3	676.3	664.9	.037670	3.5303E+05	.152156
14	+100	4	1323.2	1311.9	.028890	3.7611E+05	.111472
15	+100	5	2190.6	2192.0	.025500	4.0433E+05	.093907
16	+115	4	1320.1	1282.5	.045070	3.1699E+05	.195380
17	+115	5	2185.2	2154.0	.038670	3.5862E+05	.153963
18	+125	2	240.9	210.2	.078590	5.7418E+04	1.457984
19	+125	3	673.9	599.0	.069950	9.7186E+04	.799347
20	+125	3	673.9	629.0	.063590	2.1230E+05	.373794
21	+125	4	1318.1	1217.3	.079850	1.8546E+05	.521820
22	+125	5	2181.6	2032.0	.079230	2.0681E+05	.475081
23	+133	2	240.6	207.6	.073940	3.3653E+04	2.273934
24	+133	4	1316.5	1205.0	.086140	1.6365E+05	.622925
25	+133	5	2178.8	2043.0	.080370	2.2300E+05	.453005
26	+134	4	1302.5	2451.0	.078740	9.7291E+04	.305861
27	+134	5	2158.7	3917.0	.071990	1.2773E+05	.244663
28	+140	2	240.3	202.5	.034910	0.0000E+00	0.000000
29	+140	3	672.5	575.0	.038870	1.4824E+04	2.647195
30	+140	4	1315.1	1157.0	.088160	7.4102E+04	1.278976
31	+140	5	2176.3	1963.0	.094750	1.2958E+05	.835667
32	+145	2	240.1	201.4	.016680	0.0000E+00	0.000000

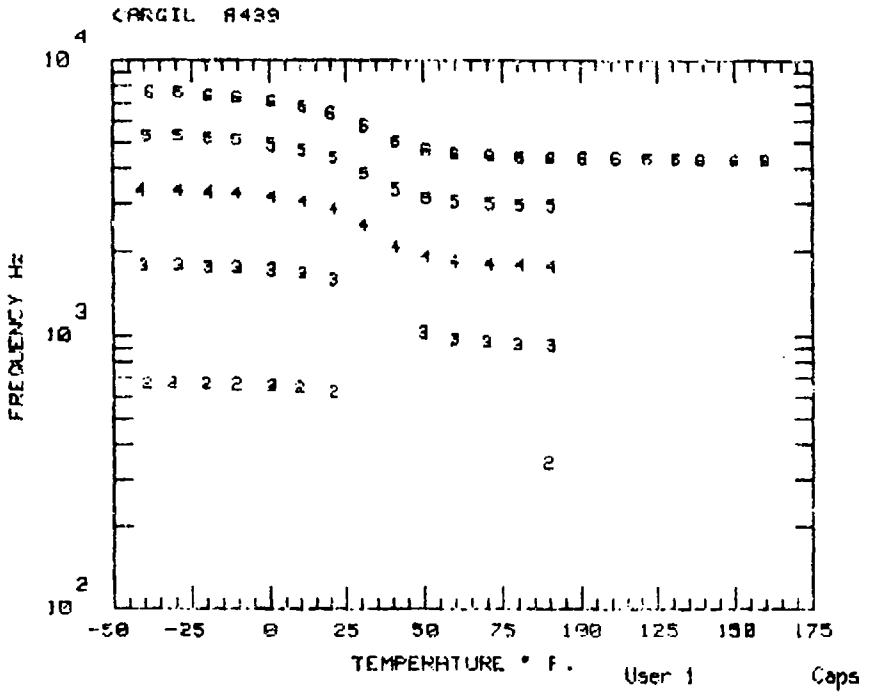
MATERIAL CODE: CM0510
MATERIAL: 880210-1
MANUFACTURER: UDRI
REMARKS: COMBINED DATA
DATE: 30 Aug 1988
ENTERED BY: DGA
BEAM MATERIAL: ALUMINUM
BEAM NUMBER: AL-060-6
BEAM TYPE: FREE LAYER ONE SIDE
BEAM LENGTH: 7 in
BEAM THICKNESS: .06 in
BEAM DENSITY: .1 lb/cu in
DAMPING MATERIAL THICKNESS: .05224 in
DAMPING MATERIAL DENSITY: .0445844 lb/cu in

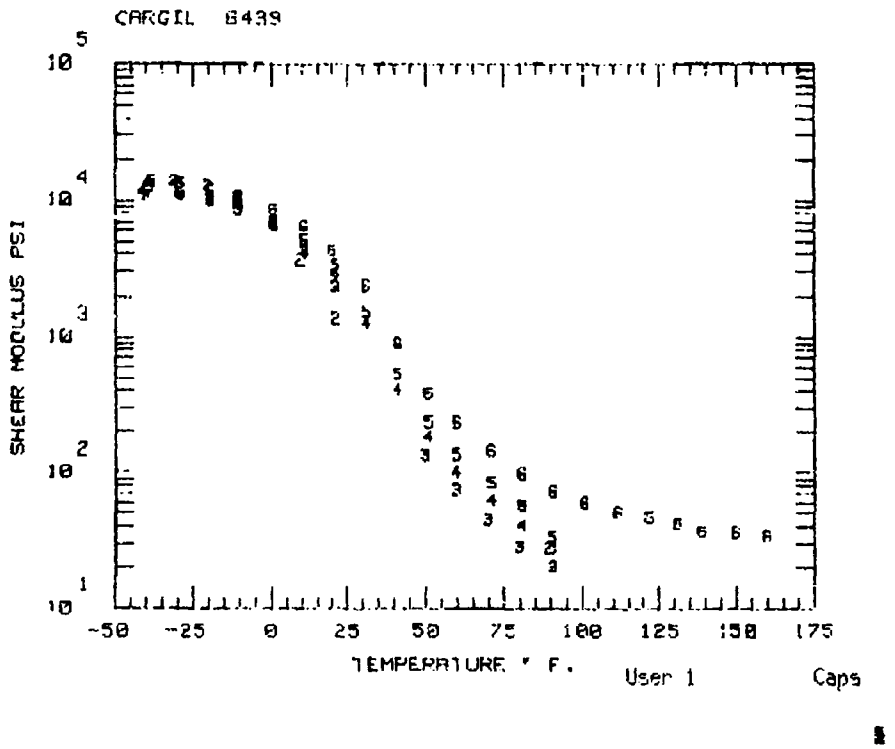
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	YOUNG'S MODULUS PSI	MATERIAL LOSS FACTOR
33	+145	3	672.0	562.0	.036050	0.0000E+00	0.000000
34	+145	5	2174.5	1879.0	.061230	3.6252E+04	1.741444
35	+150	2	240.0	201.2	.014910	0.0000E+00	0.000000
36	+150	2	236.5	449.1	.398640	4.2456E+03	3.610331
37	+150	2	236.5	449.1	.578490	0.0000E+00	0.000000
38	+150	3	671.5	561.9	.021972	0.0000E+00	0.000000
39	+150	3	661.5	1212.0	.363370	1.7170E+04	2.025484
40	+150	4	1300.5	2181.0	.358550	3.0173E+04	1.356948
41	+150	4	1300.5	2181.0	.433410	2.3540E+04	1.945818
42	+160	2	236.3	344.5	.359380	3.2374E+03	1.138963
43	+160	3	660.9	1013.0	.997040	0.0000E+00	0.000000
44	+170	2	236.1	302.1	.267230	1.8450E+03	.879595
45	+170	2	236.1	302.1	.477720	1.4057E+03	1.991278
46	+175	2	239.1	200.2	.003450	0.0000E+00	0.000000
47	+175	2	236.0	274.0	.181020	9.9870E+02	.777433
48	+175	3	669.1	555.5	.004370	0.0000E+00	0.000000
49	+175	3	660.0	750.0	.228530	2.2315E+03	1.137384
50	+175	3	660.0	705.0	.154330	1.1188E+03	1.255676
51	+175	4	1308.0	1093.4	.008030	0.0000E+00	0.000000
52	+175	4	1297.3	1357.0	.206260	1.4022E+03	2.468211
53	+175	5	2163.7	1821.0	.009720	0.0000E+00	0.000000
54	+200	2	238.2	199.4	.002760	0.0000E+00	0.000000
55	+200	2	235.4	251.3	.097810	4.0828E+02	.776278
56	+200	3	666.8	551.9	.002660	0.0000E+00	0.000000
57	+200	3	658.5	676.2	.073650	4.9328E+02	1.198327
58	+200	4	1302.9	1083.4	.004530	0.0000E+00	0.000000
59	+200	5	2154.8	1805.5	.004540	0.0000E+00	0.000000
60	+200	5	2144.1	2119.0	.048040	0.0000E+00	0.000000
61	+200	6	3204.8	3161.0	.049220	0.0000E+00	0.000000
62	+225	2	234.8	239.8	.039990	1.4625E+02	.768350
63	+225	4	1290.9	1264.5	.013550	0.0000E+00	0.000000
64	+225	5	2138.6	2084.8	.010580	0.0000E+00	0.000000

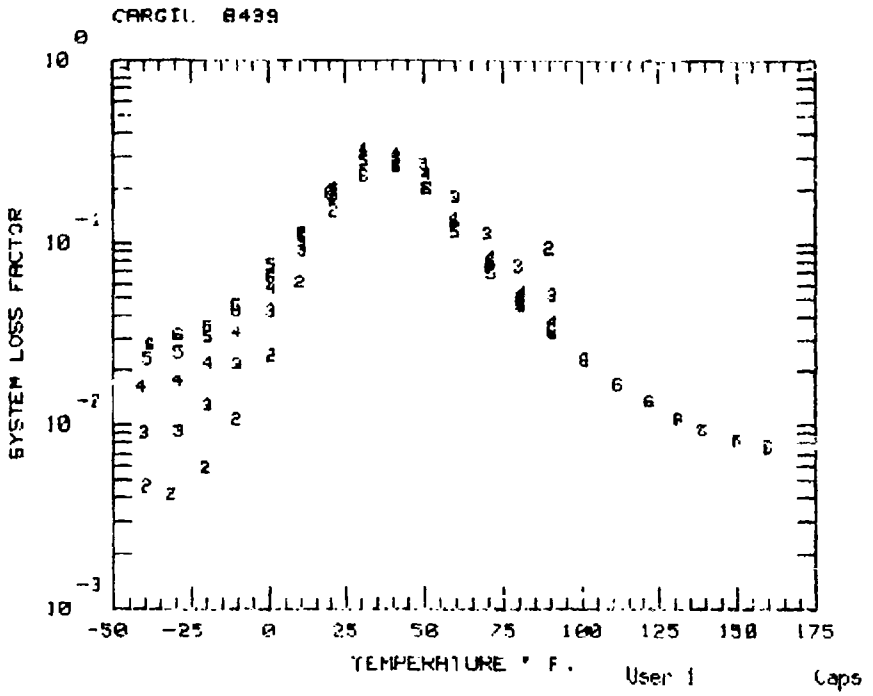
MATERIAL CODE: CM0510
MATERIAL: 880210-1
MANUFACTURER: UDRI
REMARKS: COMBINED DATA
DATE: 30 Aug 1988
ENTERED BY: DGA
BEAM MATERIAL: ALUMINUM
BEAM NUMBER: AL-060-6
BEAM TYPE: FREE LAYER ONE SIDE
BEAM LENGTH: 7 in
BEAM THICKNESS: .06 in
BEAM DENSITY: .1 lb/cu in
DAMPING MATERIAL THICKNESS: .05224 in
DAMPING MATERIAL DENSITY: .0445844 lb/cu in

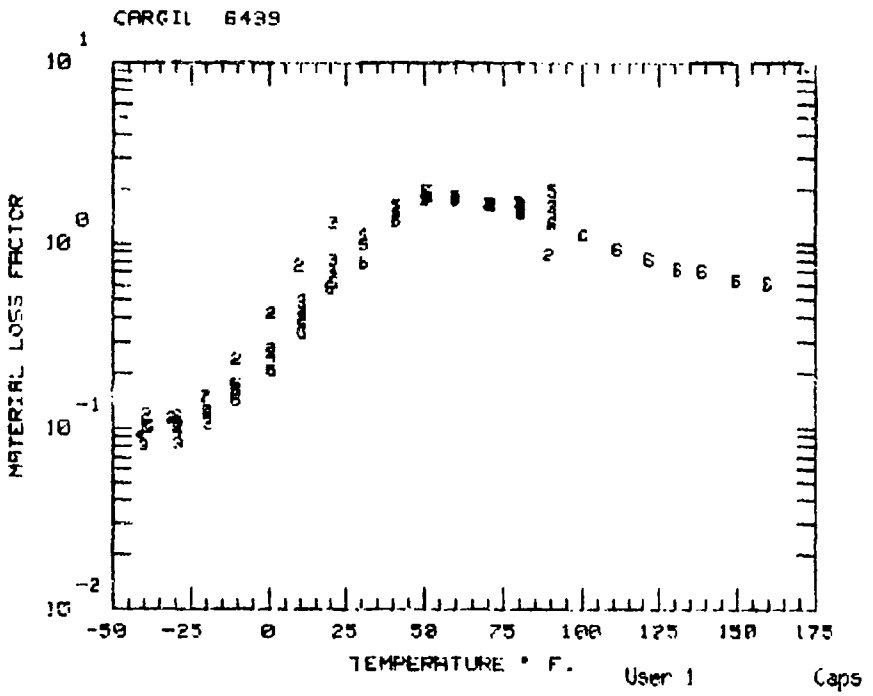
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	YOUNG'S MODULUS PSI	MATERIAL LOSS FACTOR
65	+225	6	3196.8	3118.0	.009910	0.0000E+00	0.000000
66	+226	2	237.3	198.8	.003030	0.0000E+00	0.000000
67	+226	3	664.3	550.2	.002070	0.0000E+00	0.000000
68	+226	4	1297.6	1078.9	.002930	0.0000E+00	0.000000
69	+226	5	2145.5	1798.2	.003700	0.0000E+00	0.000000
70	+240	4	1289.0	1233.5	.008183	0.0000E+00	0.000000
71	+241	3	655.9	628.8	.014369	0.0000E+00	0.000000
72	+242	2	234.5	230.9	.027513	0.0000E+00	0.000000
73	+250	2	234.3	236.4	.026230	8.0808E+01	.875790
74	+250	3	655.4	625.7	.009623	0.0000E+00	0.000000
75	+250	4	1287.7	1256.6	.006760	0.0000E+00	0.000000
76	+250	5	2133.1	2074.2	.005580	0.0000E+00	0.000000
77	+250	6	3188.9	3102.0	.005640	0.0000E+00	0.000000
78	+251	2	234.3	230.4	.027298	0.0000E+00	0.000000
79	+251	4	1287.6	1229.6	.005794	0.0000E+00	0.000000
80	+260	4	1286.5	1227.7	.005590	0.0000E+00	0.000000
81	+261	2	234.0	230.4	.031240	0.0000E+00	0.000000
82	+261	3	654.7	625.3	.008975	0.0000E+00	0.000000
83	+270	3	654.1	625.3	.011526	0.0000E+00	0.000000
84	+271	2	233.8	230.4	.037172	0.0000E+00	0.000000

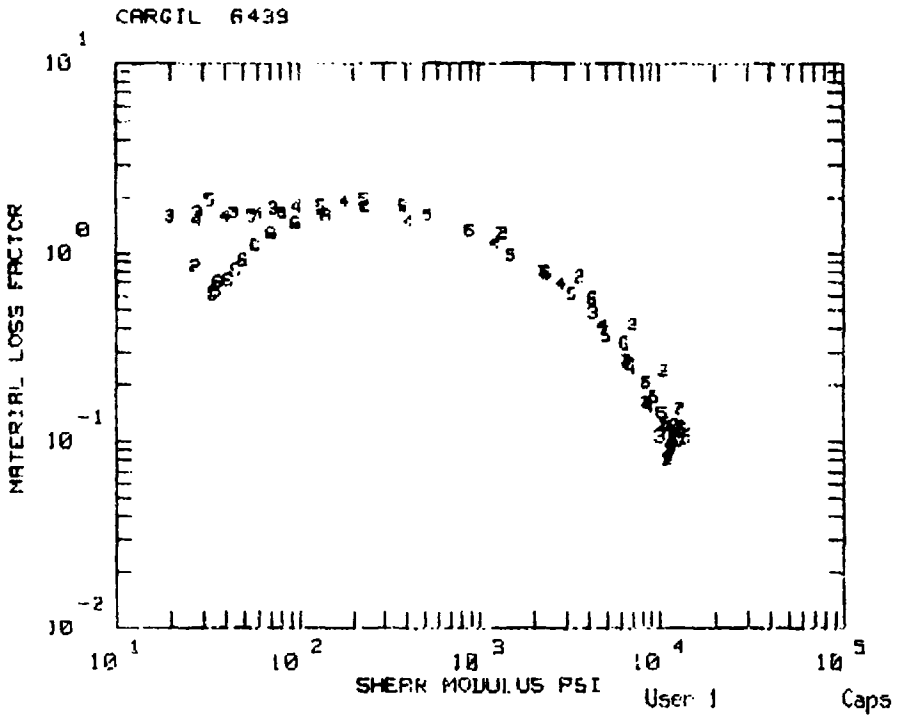

CARGIL 6439
TEMPERATURE DEG F (DELTA=25)
60
10
MODULUS
LOSS FACTOR
SHEAR MODULUS psi
FREQUENCY HERTZ
REDUCED FREQUENCY HERTZ


CARGIL B439
FREQUENCY Hz
TEMPERATURE ° F.
User 1
Caps


CARGIL B439
SHEAR MODULUS PSI
TEMPERATURE ° F.
User 1
Caps


CARGIL 6439
SYSTEM LOSS FACTOR
10^0
10^-1
10^-2
10^-3
-50 -25 0 25 50 75 100 125 150 175
TEMPERATURE ° F.
User 1
Caps


CARGIL 6439
MATERIAL LOSS FACTOR
10^1
10^0
10^-1
10^-2
-50 -25 0 25 50 75 100 125 150 175
TEMPERATURE ° F.
User 1
Caps



MATERIAL CODE: ED0431
MATERIAL: CARGIL 6439

UNITS ARE ENGLISH
LOG(M)=LOG(ML)+(2LOG(MROM/ML))/(1+(FQROM/FR)^SLOPE)

TZERO	FQROM	MROM	SLOPE	ML
140.0	2.075E+06	6.725E+02	0.624	3.473E+01

LOG(ETA)=LOG(ETFROL)+((SH+SL)A+(SL-SH)(1-SQR(1+A^2)))C/2

TZERO	ETFROL	SL	SH	FROL	C
140.0	2.004	.225	-.520	1.078E+06	.250

LOG(FR)=LOG(F)-12(T-T0)/(525+T-T0)
A=(LOG(FR)-LOG(FROL))/C

MATERIAL CODE: ED0431
MATERIAL: CARGIL G439
MANUFACTURER:
REMARKS: TEST 2
DATE: 10 Mar 1988
ENTERED BY: BJF
BEAM MATERIAL: ALUMINUM
BEAM NUMBER: .080-E &.080-G
BEAM TYPE: SANDWICH BEAM
BEAM LENGTH: 7 in
BEAM THICKNESS: .08 in
BEAM DENSITY: .1 lb/cu in
DAMPING MATERIAL THICKNESS: .0030 in
DAMPING MATERIAL DENSITY: .0340 lb/cu in

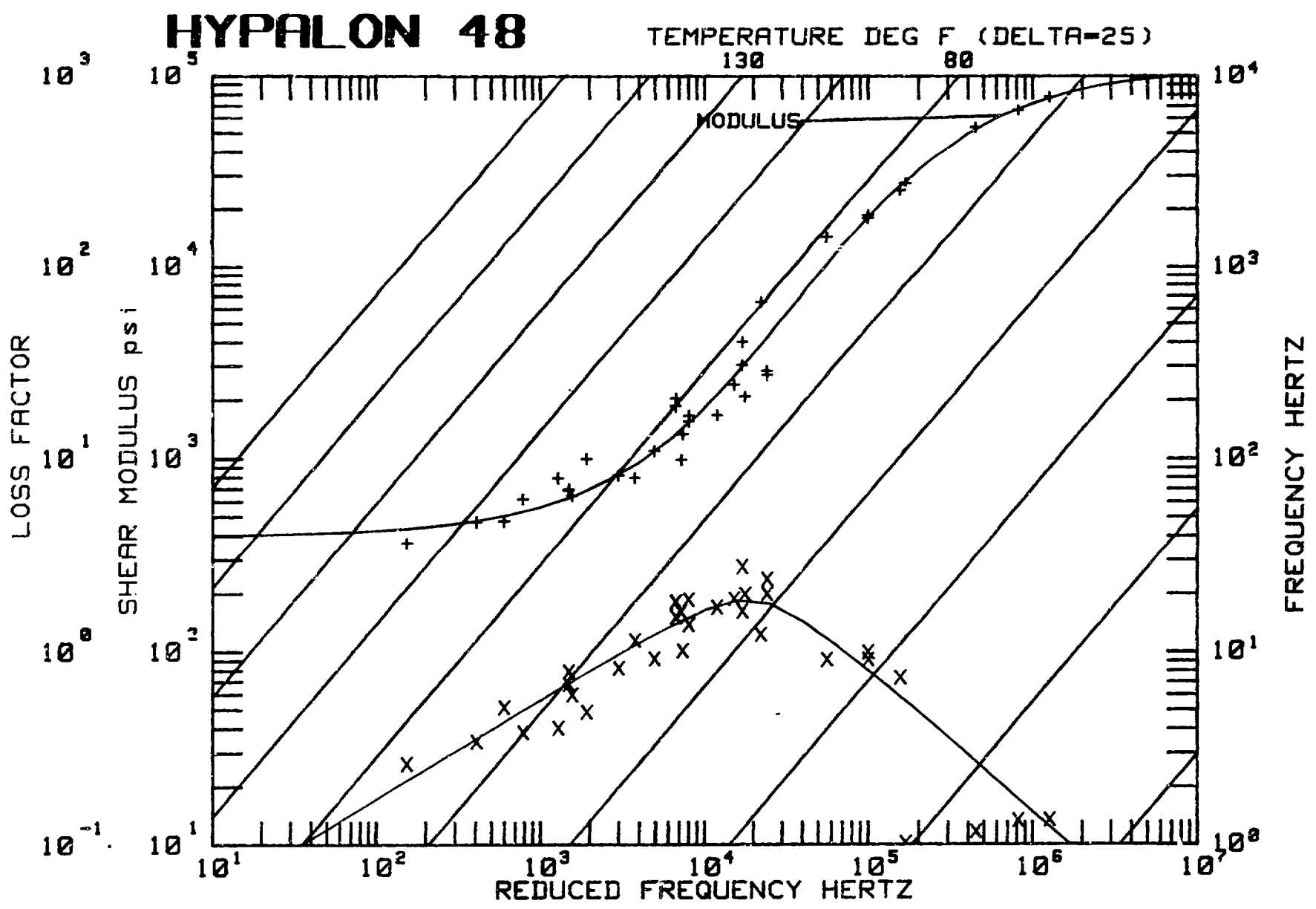
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	SHEAR MODULUS PSI	MATERIAL LOSS FACTOR
1	-41	4	1799.6	3340.3	.016217	1.1495E+04	.091771
2	-40	3	925.7	1794.4	.009007	1.0933E+04	.080108
3	-39	2	330.5	668.3	.004610	1.2855E+04	.118144
4	-39	5	2971.0	5287.0	.022977	1.2506E+04	.100447
5	-38	6	4437.9	7608.1	.027621	1.3852E+04	.103566
6	-31	2	330.1	668.3	.004156	1.3715E+04	.113316
7	-29	3	924.2	1792.6	.009131	1.1012E+04	.081911
8	-29	4	1796.4	3327.8	.017441	1.1195E+04	.097246
9	-29	5	2966.4	5260.0	.024781	1.2077E+04	.106511
10	-29	6	4431.0	7509.9	.031189	1.3446E+04	.115051
11	-20	2	329.5	666.4	.005795	1.2859E+04	.150578
12	-19	3	922.9	1781.1	.012808	1.0031E+04	.107288
13	-19	4	1793.7	3295.6	.022007	1.0187E+04	.115800
14	-19	5	2961.9	5184.7	.030601	1.0790E+04	.124323
15	-19	6	4423.3	7433.1	.034731	1.1892E+04	.122438
16	-10	2	329.0	663.1	.010688	1.0509E+04	.237928
17	-10	3	921.7	1762.3	.021498	8.5483E+03	.161064
18	-10	4	1791.3	3246.4	.032120	8.7900E+03	.155292
19	-10	5	2957.8	5092.5	.045261	9.3766E+03	.173082
20	-10	6	4416.4	7277.9	.042429	1.0340E+04	.142323
21	+1	2	328.4	657.1	.024222	7.1495E+03	.419382
22	+1	3	920.2	1729.6	.042730	6.5163E+03	.271450
23	+1	4	1788.4	3165.4	.057532	6.9239E+03	.247931
24	+1	5	2952.7	4874.4	.075919	6.8141E+03	.258626
25	+1	6	4408.0	7059.0	.064878	8.4840E+03	.206269
26	+10	2	328.0	646.2	.060968	3.6480E+03	.753773
27	+11	3	918.8	1678.9	.091501	4.3043E+03	.484016
28	+11	4	1785.7	3044.7	.108519	4.8746E+03	.414468
29	+11	5	2948.2	4665.4	.114222	5.0604E+03	.363575
30	+11	6	4400.3	6768.4	.109161	6.4514E+03	.333105
31	+20	6	4393.4	6353.4	.188068	4.2519E+03	.576837
32	+21	2	327.4	622.7	.151176	1.3542E+03	1.294942

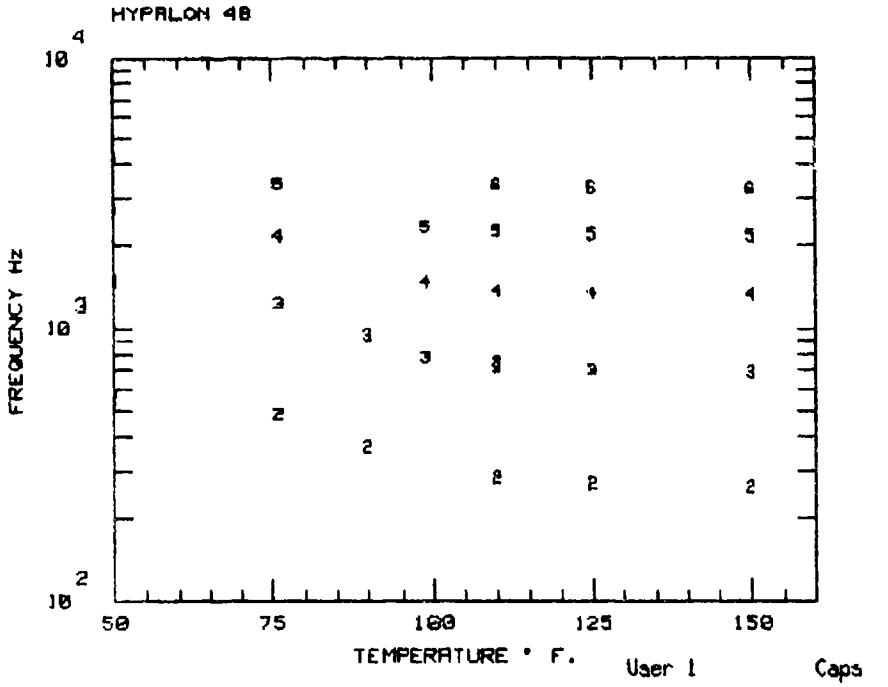
MATERIAL CODE: ED0431
MATERIAL: CARGIL 6439
MANUFACTURER:
REMARKS: TEST 2
DATE: 10 Mar 1988
ENTERED BY: BJF
BEAM MATERIAL: ALUMINUM
BEAM NUMBER: .080-E &.080-G
BEAM TYPE: SANDWICH BEAM
BEAM LENGTH: 7 in
BEAM THICKNESS: .08 in
BEAM DENSITY: .1 lb/cu in
DAMPING MATERIAL THICKNESS: .0038 in
DAMPING MATERIAL DENSITY: .0348 lb/cu in

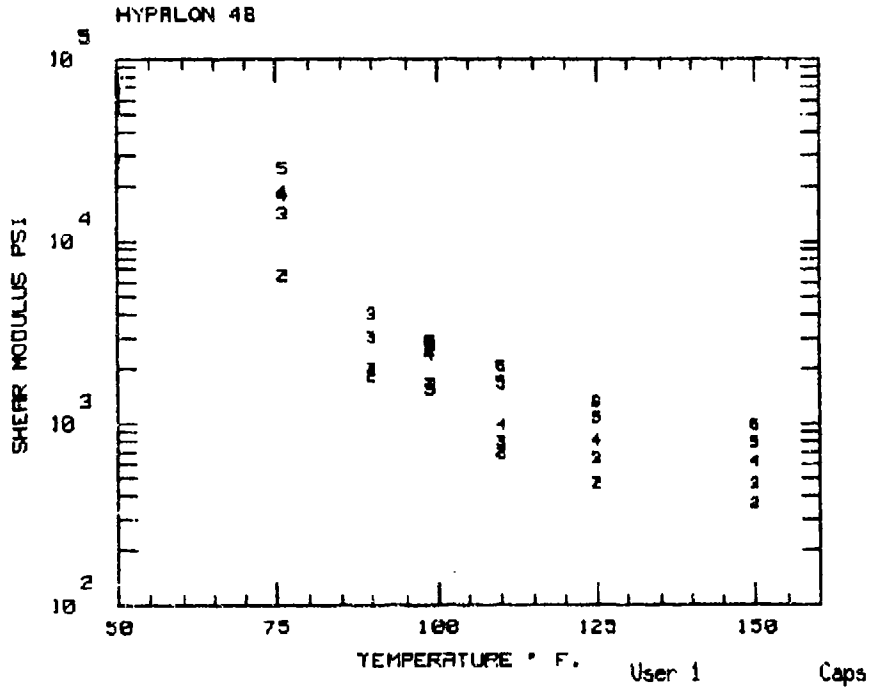
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	SHEAR MODULUS PSI	MATERIAL LOSS FACTOR
33	+21	3	917.5	1590.3	.182468	2.3153E+03	.806526
34	+21	4	1783.0	2854.6	.199787	2.8783E+03	.696968
35	+21	5	2943.6	4370.8	.194131	3.2850E+03	.606991
36	+31	4	1780.3	2509.7	.324432	1.2400E+03	1.141895
37	+31	5	2939.0	3864.7	.282369	1.5139E+03	.980850
38	+31	6	4385.0	5758.8	.236355	2.3676E+03	.787737
39	+41	4	1777.7	2086.3	.307177	4.1046E+02	1.483474
40	+41	5	2934.5	3342.4	.288053	5.2885E+02	1.595781
41	+41	6	4377.3	5033.5	.261282	8.9463E+02	1.326395
42	+50	3	913.5	1017.4	.271069	1.3350E+02	1.724569
43	+51	4	1775.0	1919.9	.237407	1.8323E+02	1.917892
44	+51	5	2929.9	3112.4	.199540	2.3502E+02	1.950990
45	+51	6	4369.7	4665.5	.190997	3.8407E+02	1.816229
46	+60	3	912.2	968.1	.180702	7.4361E+01	1.749447
47	+60	4	1772.6	1846.2	.138474	1.0024E+02	1.801006
48	+60	5	2925.8	3022.6	.115067	1.3535E+02	1.788111
49	+60	6	4362.8	4534.2	.130964	2.3517E+02	1.772103
50	+70	3	910.8	942.7	.112860	4.5010E+01	1.657285
51	+71	4	1769.6	1811.4	.083238	6.1772E+01	1.654987
52	+71	5	2920.8	2974.3	.068350	8.2560E+01	1.647670
53	+71	6	4354.3	4450.8	.076897	1.4411E+02	1.602359
54	+80	3	909.5	928.1	.075348	2.8333E+01	1.673644
55	+81	4	1766.9	1791.8	.053723	4.0640E+01	1.569853
56	+81	5	2916.2	2948.9	.046054	5.6445E+01	1.582413
57	+81	6	4346.7	4405.6	.048446	9.7320E+01	1.449402
58	+90	2	323.8	343.1	.094212	2.7614E+01	.864043
59	+91	3	908.0	920.0	.052088	2.0087E+01	1.580804
60	+91	4	1764.3	1779.4	.030718	2.8365E+01	1.506212
61	+91	5	2911.7	2925.9	.033675	3.2982E+01	1.934498
62	+91	6	4339.0	4377.7	.032183	7.1885E+01	1.279859
63	+101	6	4331.3	4359.7	.022971	5.8734E+01	1.105700
64	+112	6	4322.9	4345.0	.016642	5.0696E+01	.920209

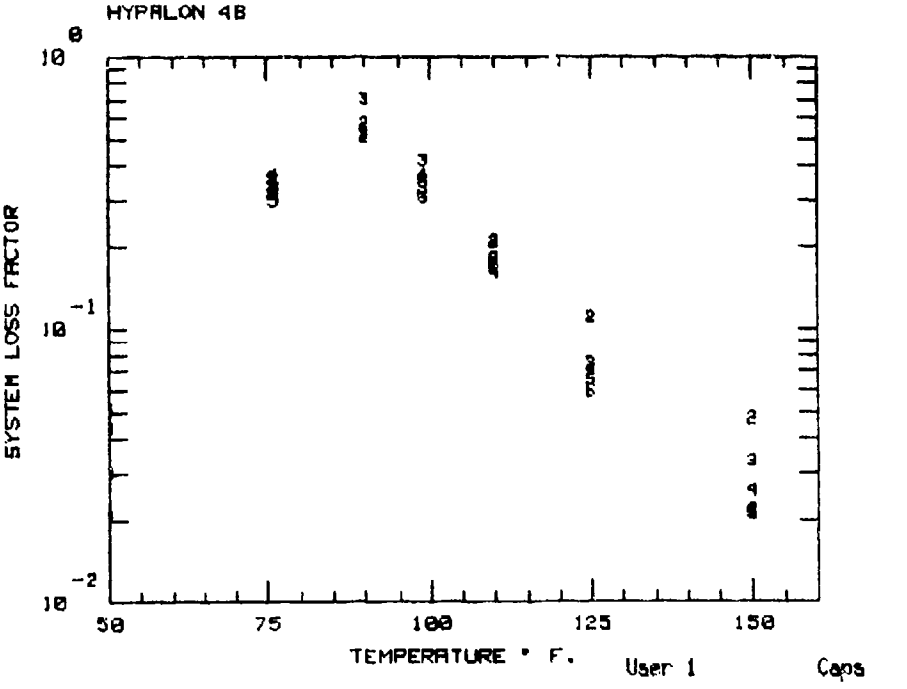
MATERIAL CODE: CD0431
MATERIAL: CARGIL 6439
MANUFACTURER:
REMARKS: TEST 2
DATE: 10 Mar 1988
ENTERED BY: BJF
BEAM MATERIAL: ALUMINUM
BEAM NUMBER: .080-E &.080-G
BEAM TYPE: SANDWICH BEAM
BEAM LENGTH: 7 in
BEAM THICKNESS: .08 in
BEAM DENSITY: .1 lb/cu in
DAMPING MATERIAL THICKNESS: .0038 in
DAMPING MATERIAL DENSITY: .0348 lb/cu in

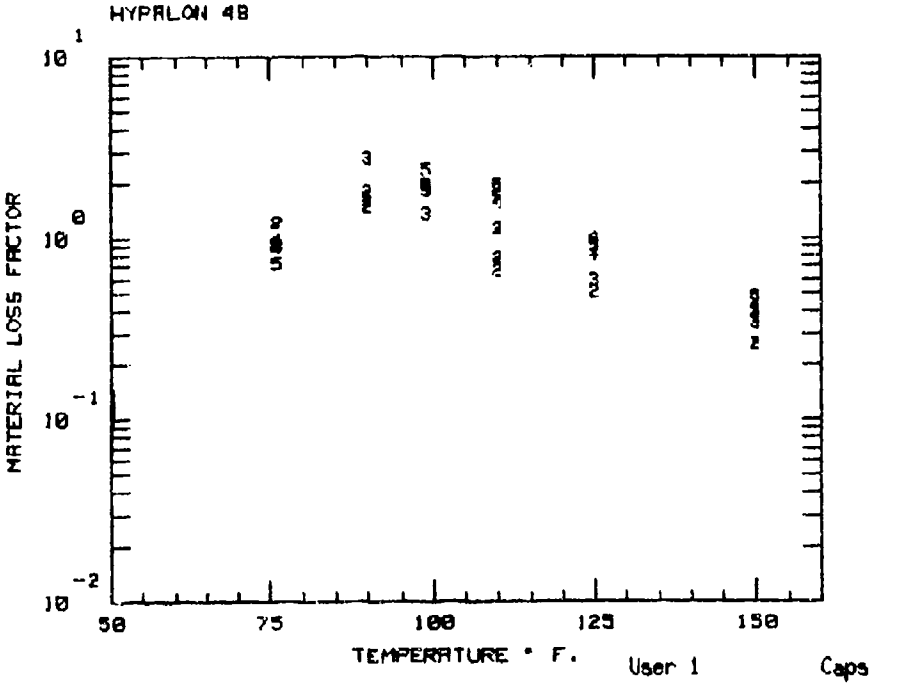
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	SHEAR MODULUS PSI	MATERIAL LOSS FACTOR
65	+122	6	4315.2	4333.9	.013449	4.6120E+01	.812430
66	+131	6	4308.4	4323.7	.010835	4.1878E+01	.716803
67	+139	6	4302.2	4313.5	.009346	3.8657E+01	.702187
68	+150	6	4293.8	4304.5	.008263	3.5827E+01	.632461
69	+160	6	4286.1	4295.6	.007579	3.4037E+01	.606814

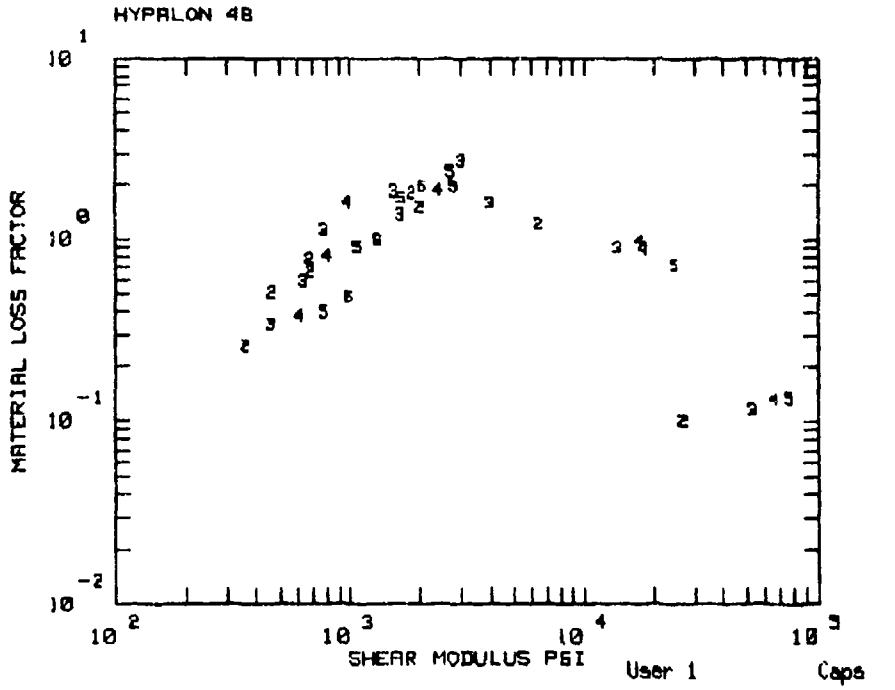

HYPALON 48
TEMPERATURE DEG F (DELTA-25)
130
80
MODULUS
LOSS FACTOR
SHEAR MODULUS psi
FREQUENCY HERTZ
REDUCED FREQUENCY HERTZ
10^{-1}
10^{0}
10^{1}
10^{2}
10^{3}
10^{4}
10^{5}
10^{6}
10^{7}


HYPALON 48
FREQUENCY Hz
10^4
10^3
10^2
50
75
100
125
150
TEMPERATURE ° F.
User 1
Caps


HYPALON 48
SHEAR MODULUS PSI
10^5
10^4
10^3
10^2
50
75
100
125
150
TEMPERATURE ° F.
User 1
Caps


HYPALON 4B
SYSTEM LOSS FACTOR
10^0
10^-1
10^-2
50
75
100
125
150
TEMPERATURE ° F.
User 1
Caps


HYPALON 4B
MATERIAL LOSS FACTOR
10^1
10^0
10^-1
10^-2
50
75
100
125
150
TEMPERATURE ° F.
User 1
Caps



MATERIAL CODE: ED0014
MATERIAL: HYPALON 48

UNITS ARE ENGLISH
LOG(M)=LOG(ML)+(2LOG(MROM/ML))/(1+(FQROM/FR)^SLOPE)

TZERO	FQROM	MROM	SLOPE	ML
140.0	3.715E+04	6.673E+03	0.757	4.010E+02

LOG(ETA)=LOG(ETFROL)+'(SH+SL)A+(SL-SH)(1-SQR(1+A^2)))C/2

TZERO	ETFROL	SL	SH	FROL	C
140.0	1.836	.522	-.754	2.048E+04	.303

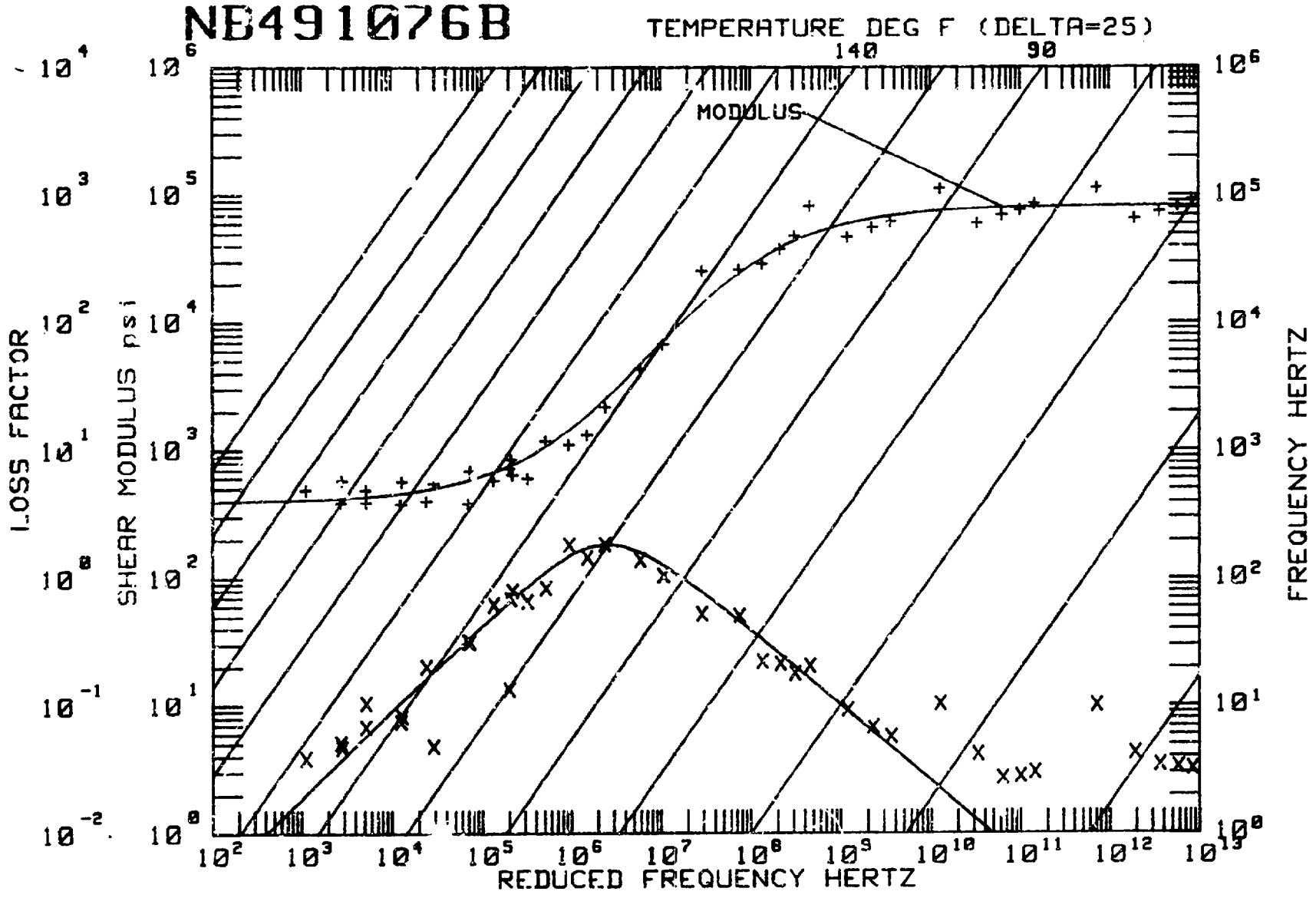
LOG(FR)=LOG(F)-12(T-T0)/(525+T-T0)
A=(LOG(FR)-LOG(FROL))/C

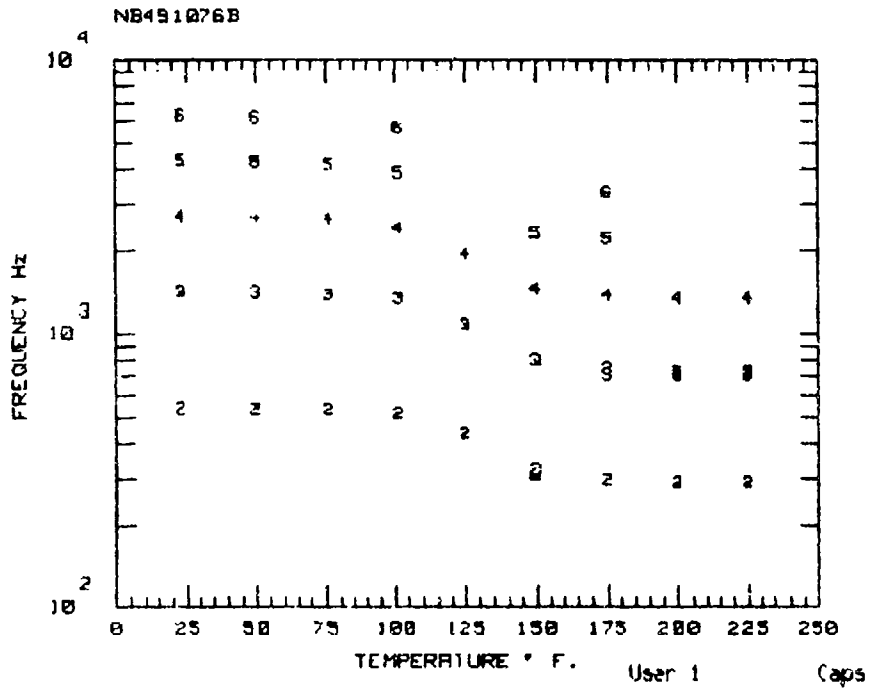
MATERIAL CODE: ED0014
MATERIAL: HYPALON 48
MANUFACTURER: UD
REMARKS:
DATE: 4 Dec 1986
ENTERED BY: SRR
BEAM MATERIAL: STAINLESS STEEL
BEAM NUMBER: SS-7-03 & SS-7-07
BEAM TYPE: SANDWICH BEAM
BEAM LENGTH: 7 in
BEAM THICKNESS: .059125 in
BEAM DENSITY: .283 lb/cu in
DAMPING MATERIAL THICKNESS: .0242 in
DAMPING MATERIAL DENSITY: .04552 lb/cu in

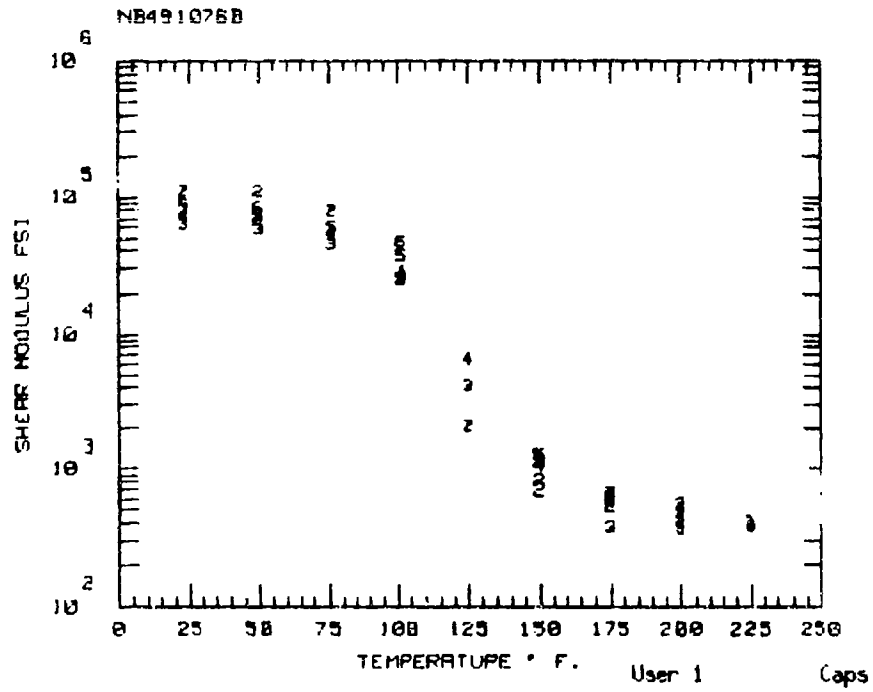
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	SHEAR MODULUS PSI	MATERIAL LOSS FACTOR
1	+50	2	241.0	554.2	.020700	2.7214E+04	.101242
2	+50	3	669.9	1480.6	.029780	5.3103E+04	.116040
3	+50	4	1314.7	2715.0	.043720	6.5749E+04	.132557
4	+50	5	2179.2	4227.0	.050860	7.7087E+04	.133403
5	+76	2	240.2	483.0	.335400	6.4628E+03	1.214468
6	+76	3	668.0	1230.0	.319540	1.4115E+04	.901529
7	+76	4	1311.0	2181.0	.374140	1.7863E+04	.984059
8	+76	4	1311.0	2181.0	.349610	1.8412E+04	.899391
9	+76	5	2173.1	3387.0	.298200	2.4885E+04	.724359
10	+99	3	666.4	778.0	.333430	1.6517E+03	1.368313
11	+99	4	1307.7	1477.0	.368310	2.3922E+03	1.857891
12	+99	5	2167.6	2357.0	.305470	2.8000E+03	1.966663
13	+99	5	2167.6	2357.0	.351850	2.6836E+03	2.360216
14	+125	2	238.7	267.7	.109450	4.6962E+02	.506945
15	+125	5	2161.5	2209.6	.065120	1.0881E+03	.906639
16	+125	6	3237.3	3286.0	.059040	1.3206E+03	.999380
17	+150	2	238.0	260.0	.046920	3.6302E+02	.259251
18	+150	3	662.7	687.0	.032900	4.6609E+02	.338418
19	+150	4	1300.4	1326.3	.025790	6.1517E+02	.377661
20	+150	5	2155.6	2180.8	.021280	7.8434E+02	.397410
21	+150	6	3228.1	3251.8	.021830	9.8958E+02	.480347
22	+90	2	239.8	367.0	.566210	1.8466E+03	1.787686
23	+90	2	239.8	367.0	.510840	2.0192E+03	1.498288
24	+90	3	667.0	940.5	.696540	3.0036E+03	2.730298
25	+90	3	667.0	940.5	.525100	3.9885E+03	1.604333
26	+110	2	239.2	281.9	.210530	6.8286E+02	.778915
27	+110	2	239.2	281.9	.182330	6.9011E+02	.667988
28	+110	3	665.6	714.1	.167480	7.8887E+02	1.128739
29	+110	4	1306.1	1361.3	.161020	9.7947E+02	1.584179
30	+110	5	2165.0	2260.0	.173850	1.6640E+03	1.680753
31	+110	6	3242.8	3354.0	.172630	2.0714E+03	1.966152
32	+99	3	666.4	778.0	.419020	1.5422E+03	1.834103

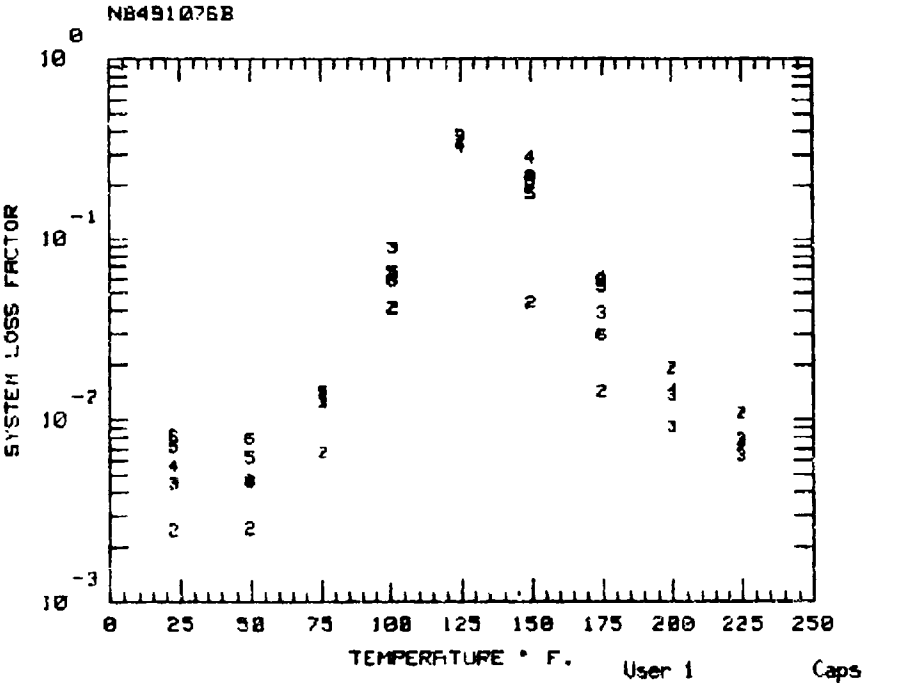
MATERIAL CODE: ED0014
MATERIAL: HYPALON 48
MANUFACTURER: UD
REMARKS:
DATE: 4 Dec 1986
ENTERED BY: SRR
BEAM MATERIAL: STAINLESS STEEL
BEAM NUMBER: SS-7-03 & SS-7-07
BEAM TYPE: SANDWICH BEAM
BEAM LENGTH: 7 in
BEAM THICKNESS: .059125 in
BEAM DENSITY: .283 lb/cu in
DAMPING MATERIAL THICKNESS: .0242 in
DAMPING MATERIAL DENSITY: .04552 lb/cu in

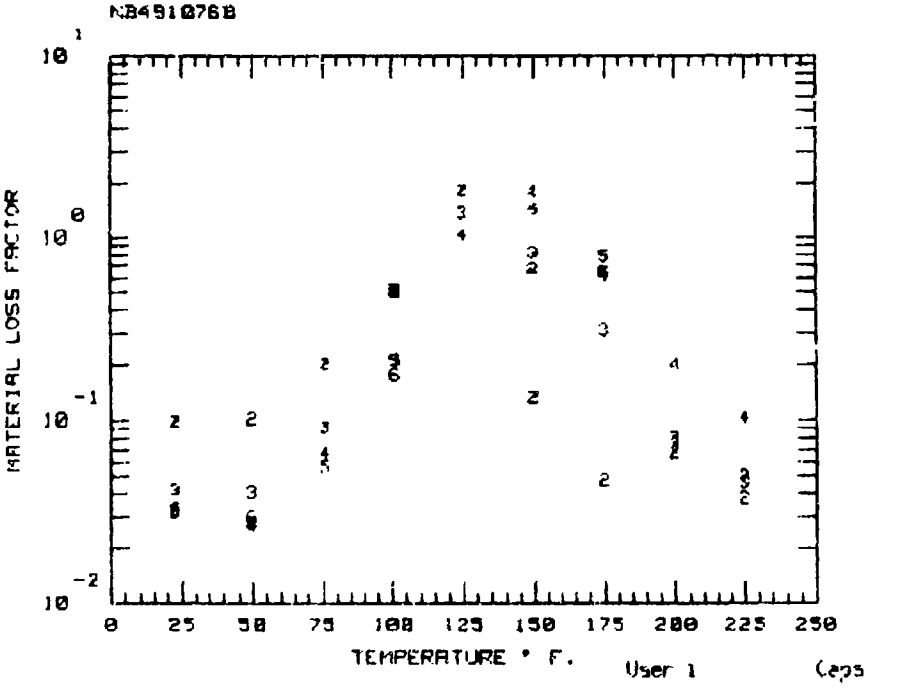
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	SHEAR MODULUS PSI	MATERIAL LOSS FACTOR
33	+125	3	664.5	701.2	.074440	6.3931E+02	.589513
34	+125	4	1304.0	1344.5	.070660	8.1120E+02	.812756
35	+110	3	0.0	744.5	.211680	0.0000E+00	0.000000

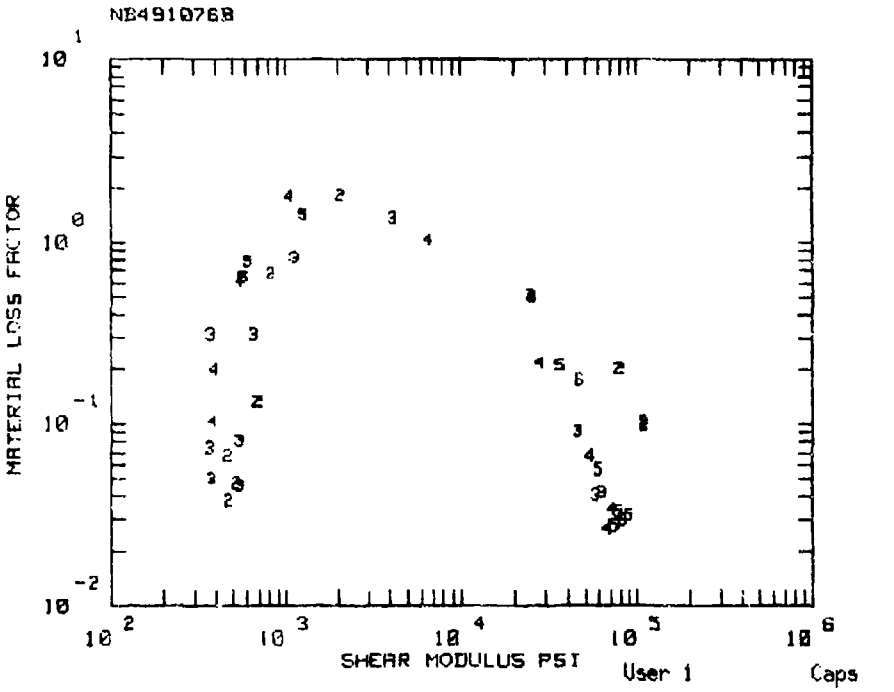

NB491076B
TEMPERATURE DEG F (DELTA=25)
140
90
MODULUS
LOSS FACTOR
SHEAR MODULUS psi
FREQUENCY HERTZ
REDUCED FREQUENCY HERTZ


NB491076B
FREQUENCY Hz
TEMPERATURE ° F.
User 1
Caps


NB491076B
SHEAR MODULUS PSI
TEMPERATURE ° F.
User 1
Caps


NB491076B
SYSTEM LOSS FACTOR
TEMPERATURE ° F.
User 1
Caps


NB491076B
MATERIAL LOSS FACTOR
TEMPERATURE ° F.
User 1
Caps



MATERIAL CODE: ED0125
MATERIAL: NB4910768

UNITS ARE ENGLISH
LOG(M)=LOG(ML)+(2LOG(MROM/ML))/(1+(FQROM/FR)^SLOPE)

TZERO	FQROM	MROM	SLOPE	ML
250.0	7.894E+06	5.691E+03	0.544	3.936E+02

LOG(ETA)=LOG(ETFROL)+((SH+SL)A+(SL-SH)(1-SQR(1+A^2)))C/2

TZERO	ETFROL	SL	SH	FROL	C
250.0	1.844	.700	-.610	2.292E+06	.600

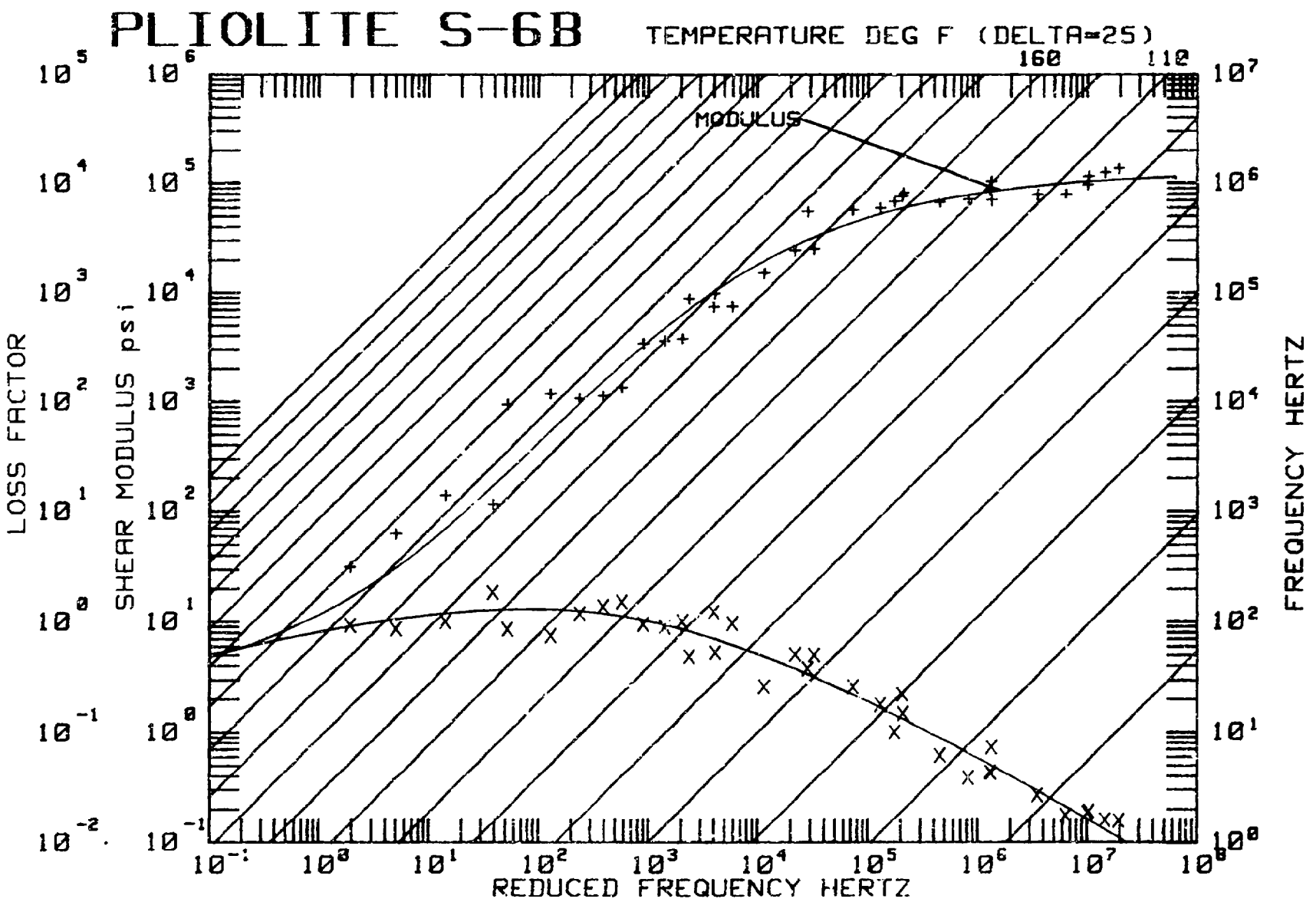
LOG(FR)=LOG(F)-12(T-T0)/(525+T-T0)
A=(LOG(FR)-LOG(FROL))/C

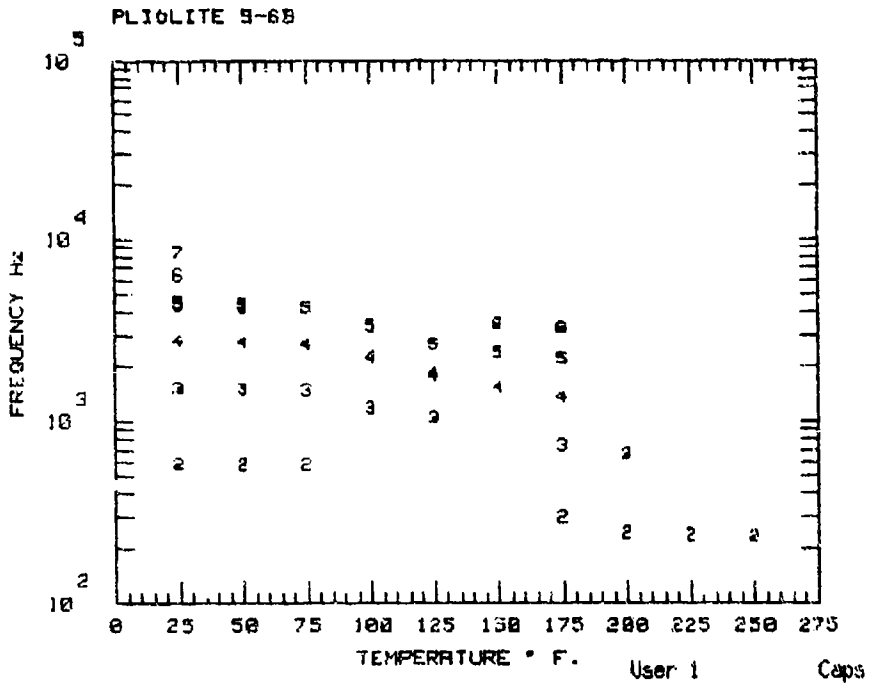
MATERIAL CODE: ED0125
MATERIAL: NB4910768
MANUFACTURER: EAR
REMARKS:
DATE: 24 Jun 1987
ENTERED BY: JPD
BEAM MATERIAL: STAINLESS STEEL
BEAM NUMBER: 7-103 & 7-104
BEAM TYPE: SANDWICH BEAM
BEAM LENGTH: 7 in
BEAM THICKNESS: .05983 in
BEAM DENSITY: .283 lb/cu in
DAMPING MATERIAL THICKNESS: .00954 in
DAMPING MATERIAL DENSITY: .03794 lb/cu in

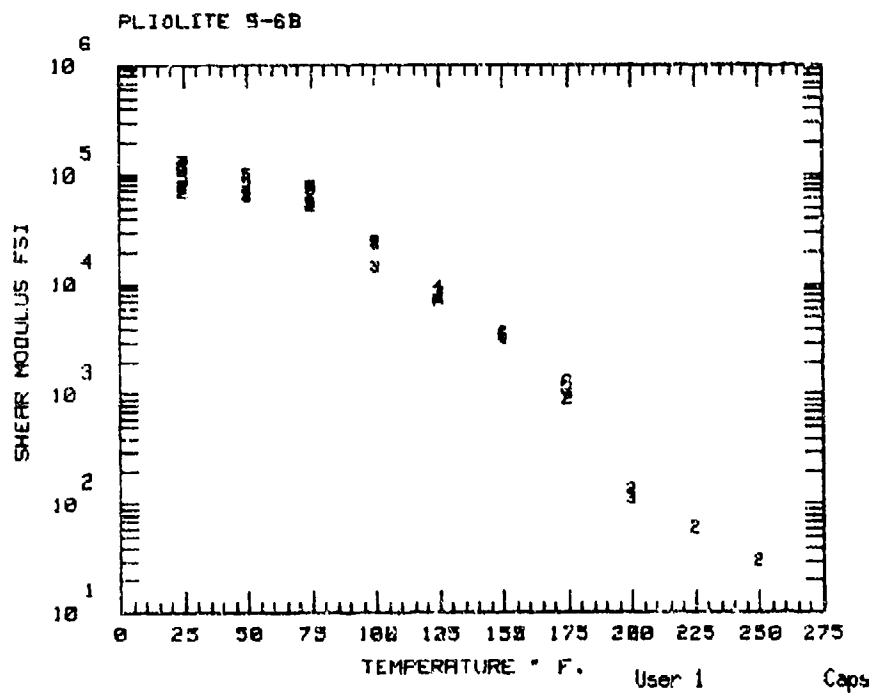
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	SHEAR MODULUS PSI	MATERIAL LOSS FACTOR
1	+23	2	242.8	534.9	.002480	1.1052E+05	.098903
2	+23	3	677.1	1425.7	.004470	6.3466E+04	.042037
3	+23	4	1333.6	2704.3	.005580	7.1783E+04	.033806
4	+23	5	2210.5	4310.5	.007120	7.9224E+04	.032634
5	+23	6	3311.3	6244.0	.008140	8.9920E+04	.031612
6	+50	2	242.1	533.3	.002550	1.0980E+05	.101679
7	+50	3	675.3	1416.2	.004630	5.8634E+04	.040957
8	+50	4	1329.6	2684.7	.004560	6.7838E+04	.026624
9	+50	5	2203.8	4267.2	.006220	7.3917E+04	.027407
10	+50	6	3301.3	6163.0	.007920	8.2818E+04	.029534
11	+76	2	241.4	529.6	.006650	7.9582E+04	.201576
12	+76	3	673.6	1391.3	.012510	4.5492E+04	.091154
13	+76	4	1325.7	2624.0	.013340	5.4194E+04	.067105
14	+76	5	2197.3	4157.0	.014290	6.0476E+04	.056302
15	+101	2	240.7	514.3	.041260	2.4862E+04	.518289
16	+101	3	672.0	1342.0	.089270	2.5474E+04	.499137
17	+101	4	1322.0	2427.0	.061280	2.8224E+04	.217473
18	+101	5	2191.2	3875.0	.065910	3.6768E+04	.209624
19	+101	6	3282.4	5640.0	.058870	4.6796E+04	.175610
20	+125	2	240.1	434.0	.355990	2.1107E+03	1.821421
21	+125	3	670.4	1075.0	.379530	4.1824E+03	1.362745
22	+125	4	1318.5	1950.0	.333330	6.5900E+03	1.034080
23	+150	2	239.5	321.2	.226650	8.2744E+02	.675380
24	+150	2	239.5	307.6	.044210	6.9864E+02	.132645
25	+150	3	668.8	800.0	.212630	1.1432E+03	.823433
26	+150	4	1314.8	1459.0	.286500	1.0709E+03	1.799192
27	+150	5	2179.0	2340.0	.181200	1.2796E+03	1.430241
28	+175	2	238.8	294.2	.014280	5.3575E+02	.047295
29	+175	3	667.1	711.5	.038790	3.7587E+02	.310517
30	+175	3	667.1	744.5	.059100	6.6702E+02	.308939
31	+175	4	1311.1	1377.0	.060280	5.5950E+02	.608548
32	+175	5	2172.9	2243.0	.054480	6.1663E+02	.785806

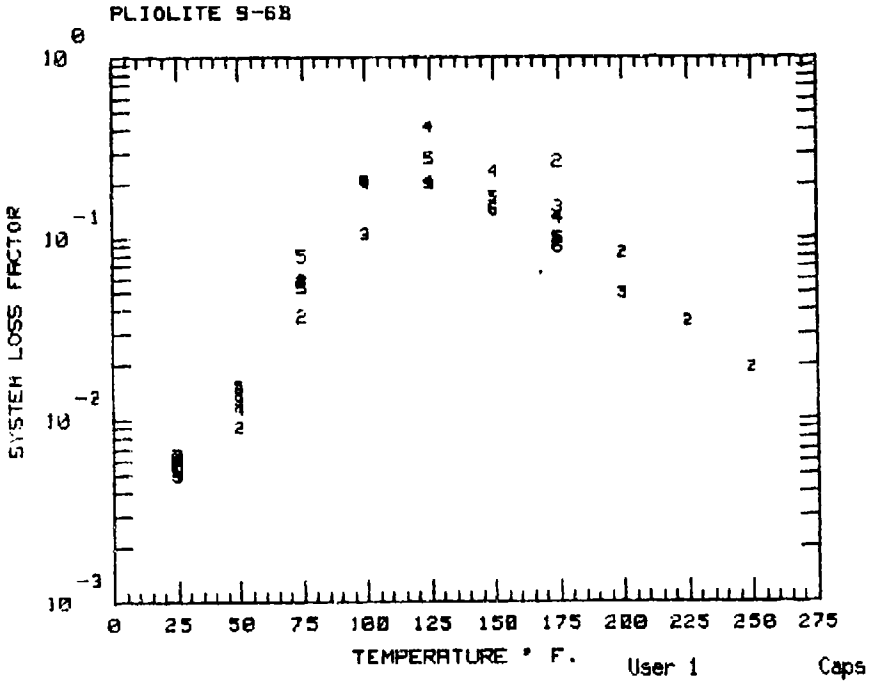
MATERIAL CODE: ED0125
MATERIAL: NB491076B
MANUFACTURER: EAR
REMARKS:
DATE: 24 Jun 1987
ENTERED BY: JPD
BEAM MATERIAL: STAINLESS STEEL
BEAM NUMBER: 7-103 & 7-104
BEAM TYPE: SANDWICH BEAM
BEAM LENGTH: 7 in
BEAM THICKNESS: .05983 in
BEAM DENSITY: .283 lb/cu in
DAMPING MATERIAL THICKNESS: .00954 in
DAMPING MATERIAL DENSITY: .03794 lb/cu in

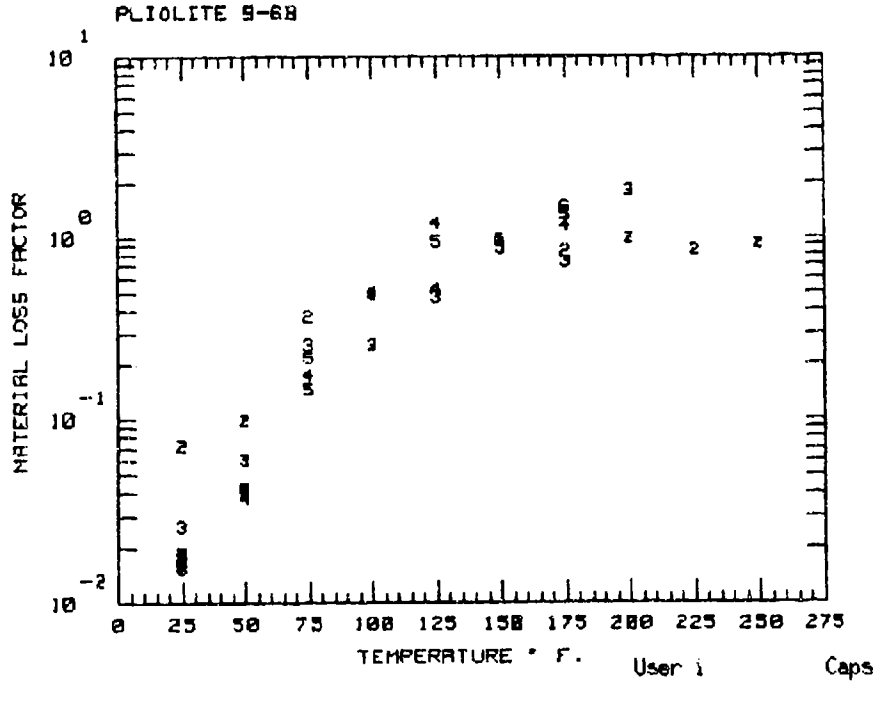
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	SHEAR MODULUS PSI	MATERIAL LOSS FACTOR
33	+175	6	3255.0	3315.0	.029320	5.8206E+02	.647013
34	+200	2	238.2	288.6	.019230	4.7629E+02	.067018
35	+200	3	665.5	709.2	.009160	3.7067E+02	.073817
36	+200	3	665.5	730.0	.013620	5.5152E+02	.080980
37	+200	4	1307.4	1352.0	.014560	3.9161E+02	.198929
38	+225	2	237.5	288.1	.010890	4.7718E+02	.037816
39	+225	3	663.8	708.8	.006370	3.8026E+02	.050095
40	+225	3	663.8	729.3	.007820	5.5883E+02	.045888
41	+225	4	1303.7	1347.1	.007370	3.8130E+02	.102633

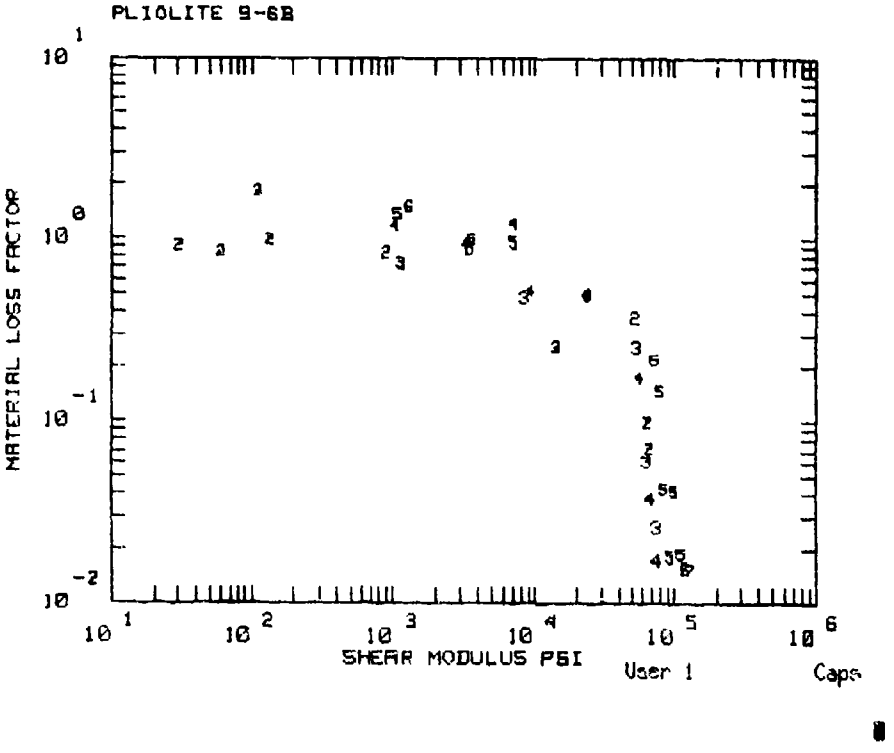

PLIOLITE S-6B
TEMPERATURE DEG F (DELTA=25)
160
110
MODULUS
LOSS FACTOR
SHEAR MODULUS psi
FREQUENCY HERTZ
REDUCED FREQUENCY HERTZ


PLIOLITE S-6B
FREQUENCY Hz
TEMPERATURE ° F.
User 1
Caps


PLIOLITE S-6B
SHEAR MODULUS PSI
TEMPERATURE ° F.
User 1
Caps


PLIOLITE S-6B
SYSTEM LOSS FACTOR
10^0
10^-1
10^-2
10^-3
0 25 50 75 100 125 150 175 200 225 250 275
TEMPERATURE ° F.
User 1
Caps


PLIOLITE S-6B
MATERIAL LOSS FACTOR
10^1
10^0
10^-1
10^-2
0 25 50 75 100 125 150 175 200 225 250 275
TEMPERATURE ° F.
User 1
Caps



MATERIAL CODE: ED0126
MATERIAL: 870202-4

UNITS ARE ENGLISH

LOG(M)=LOG(ML)+(2LOG(MROM/ML))/(1+(FQROM/FR)^SLOPE)

TZERO	FQROM	MROM	SLOPE	ML
140.0	1.200E+02	5.000E+02	0.350	2.000E+00

LOG(ETA)=LOG(ETFROL)+((SH+SL)A+(SL-SH)(1-SQR(1+A^2)))C/2

TZERO	ETFROL	SL	SH	FROL	C
140.0	1.100	.300	-.630	6.000E+02	2.400

LOG(FR)=LOG(F)-12(T-T0)/(525+T-T0)

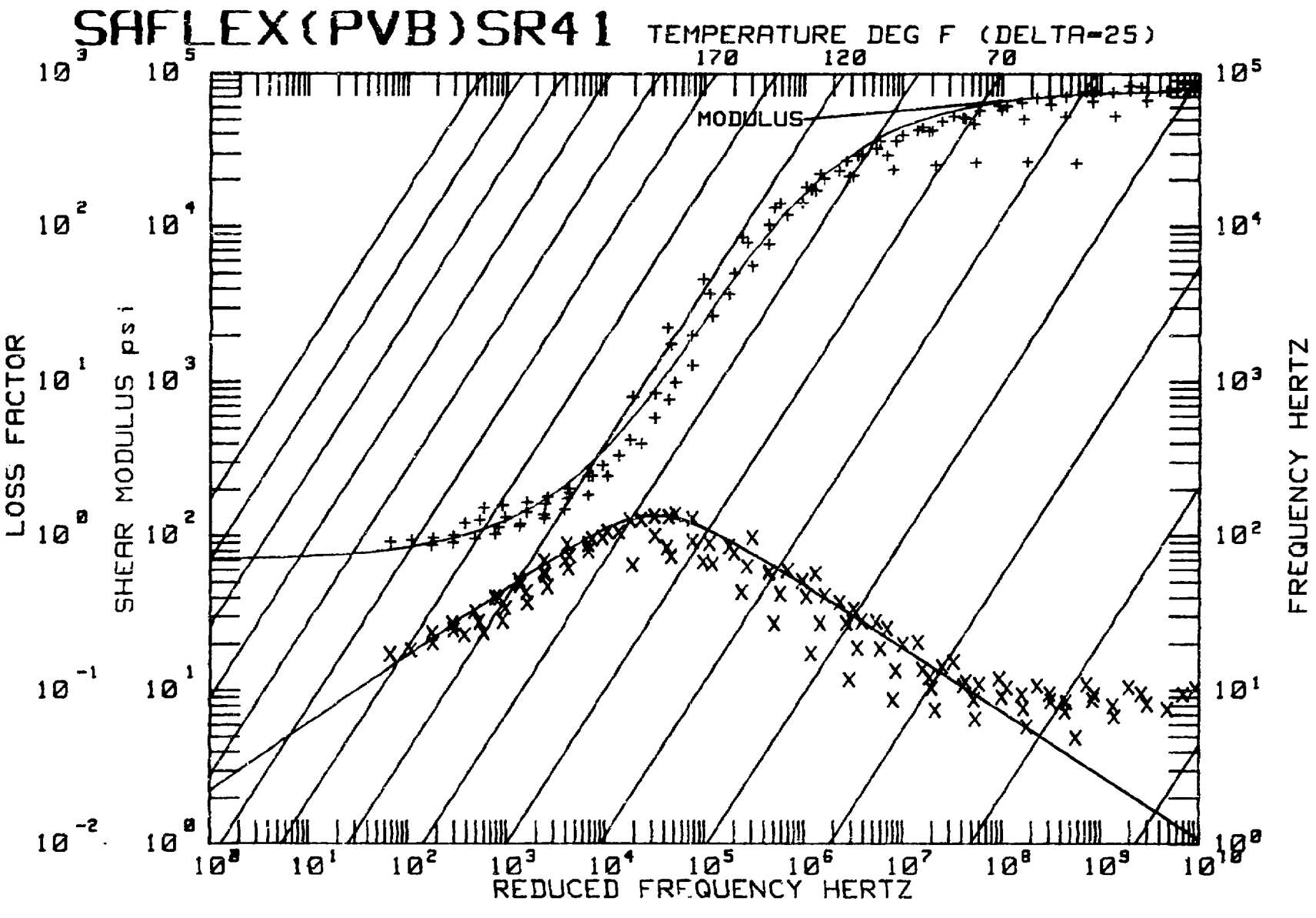
A=(LOG(FR)-LOG(FROL))/C

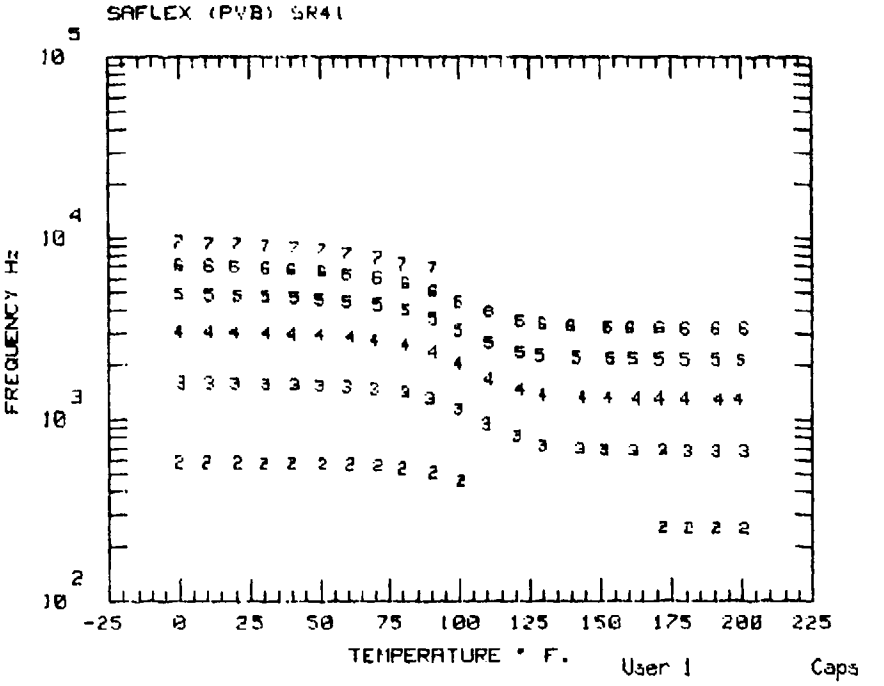
MATERIAL CODE: ED0126
MATERIAL: 870202-4
MANUFACTURER: UDRI
REMARKS:
DATE: 25 Jun 1987
ENTERED BY: TVG
BEAM MATERIAL: STAINLESS STEEL
BEAM NUMBER: 7-37 & 7-35
BEAM TYPE: SANDWICH BEAM
BEAM LENGTH: 7 in
BEAM THICKNESS: .05896 in
BEAM DENSITY: .283 lb/cu in
DAMPING MATERIAL THICKNESS: .02204 in
DAMPING MATERIAL DENSITY: .03931 lb/cu in

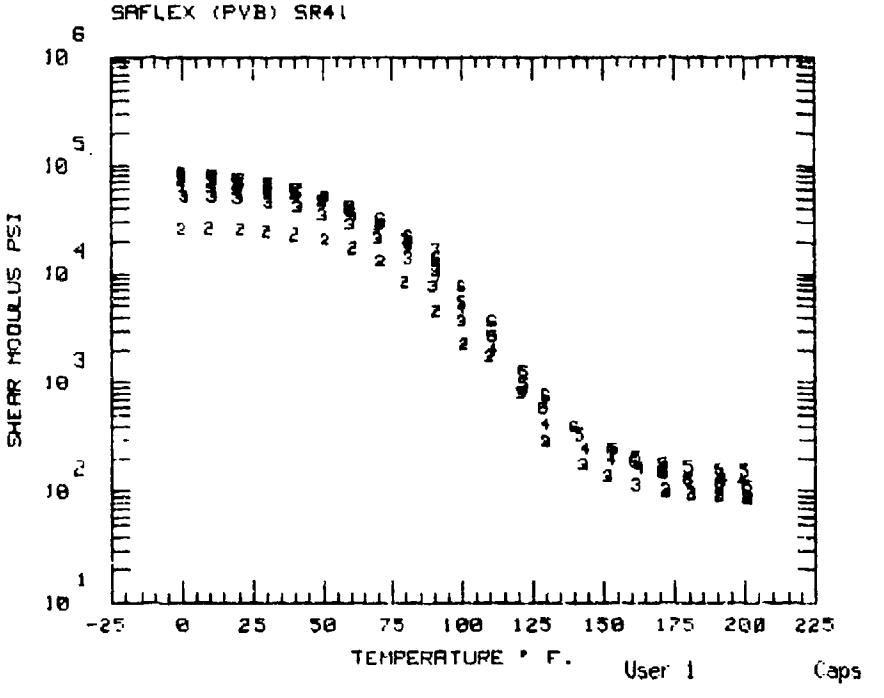
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	SHEAR MODULUS PSI	MATERIAL LOSS FACTOR
1	+25	2	239.3	581.1	.006450	6.7837E+04	.071468
2	+25	3	669.3	1527.2	.004960	7.5948E+04	.026185
3	+25	4	1316.5	2768.7	.005020	7.5941E+04	.017166
4	+25	5	2182.7	4376.0	.006140	9.3308E+04	.018083
5	+25	5	2182.7	4499.7	.005870	1.1068E+05	.018739
6	+25	6	3260.6	6362.0	.005640	1.1964E+05	.015575
7	+25	7	4543.3	8465.5	.006050	1.3012E+05	.015364
8	+50	2	238.7	579.0	.009100	6.5489E+04	.098570
9	+50	3	667.7	1500.0	.012730	6.4520E+04	.060222
10	+50	4	1313.3	2723.0	.011570	6.8692E+04	.037644
11	+50	5	2177.2	4290.0	.015080	8.3951E+04	.042580
12	+50	5	2177.2	4416.0	.013680	9.9444E+04	.041599
13	+75	2	238.2	574.7	.036890	5.2885E+04	.369506
14	+75	3	666.2	1477.0	.057620	5.4655E+04	.254684
15	+75	4	1310.1	2646.0	.057750	5.7098E+04	.174758
16	+75	5	2171.7	4196.0	.079360	7.3307E+04	.217242
17	+75	5	2171.7	4243.0	.052320	7.8876E+04	.145656
18	+100	3	664.6	1181.0	.105170	1.4532E+04	.255545
19	+100	4	1305.9	2250.0	.202220	2.3359E+04	.496534
20	+100	5	2166.1	3340.0	.206590	2.4046E+04	.489935
21	+125	3	663.1	1056.0	.200000	8.4342E+03	.472701
22	+125	4	1303.7	1828.8	.205380	9.3813E+03	.514966
23	+125	4	1303.7	1777.0	.411400	7.1109E+03	1.201784
24	+125	5	2160.6	2640.0	.276520	7.1453E+03	.941035
25	+150	4	1300.5	1524.0	.236220	3.2720E+03	.924971
26	+150	5	2155.1	2390.0	.168200	3.4636E+03	.878061
27	+150	6	3220.7	3460.0	.143350	3.6107E+03	.981175
28	+175	2	236.0	296.0	.266550	9.1354E+02	.835411
29	+175	3	660.0	737.0	.147720	1.1364E+03	.728976
30	+175	4	1297.3	1363.0	.128540	1.0296E+03	1.158574
31	+175	5	2149.6	2210.0	.100360	1.0843E+03	1.342930
32	+175	5	3212.8	3277.0	.090110	1.2944E+03	1.480542

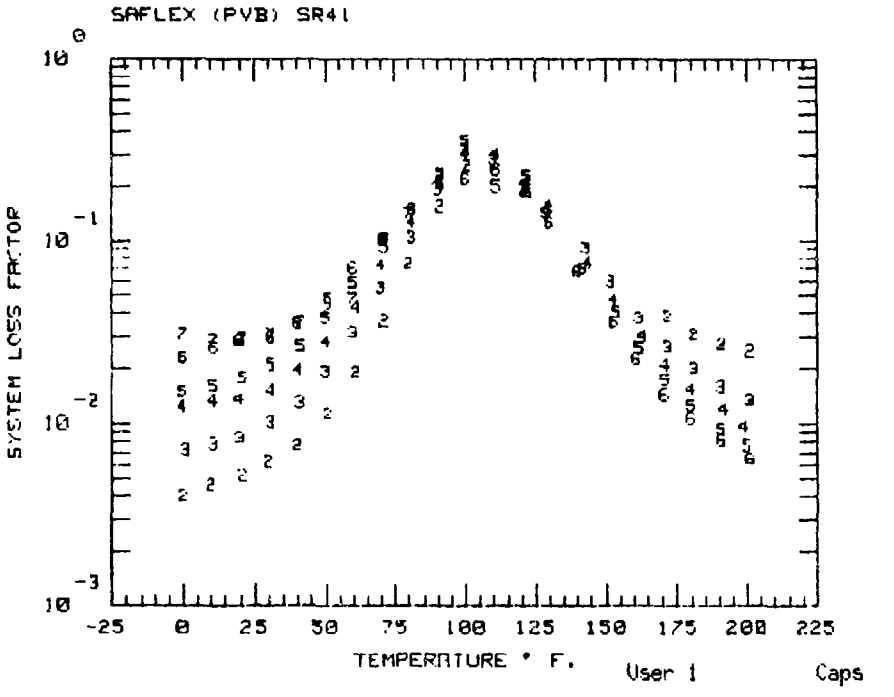
MATERIAL CODE: ED0126
MATERIAL: 870202-4
MANUFACTURER: UDRI
REMARKS:
DATE: 25 Jun 1987
ENTERED BY: TVG
BEAM MATERIAL: STAINLESS STEEL
BEAM NUMBER: 7-37 & 7-35
BEAM TYPE: SANDWICH BEAM
BEAM LENGTH: 7 in
BEAM THICKNESS: .05896 in
BEAM DENSITY: .283 lb/cu in
DAMPING MATERIAL THICKNESS: .02204 in
DAMPING MATERIAL DENSITY: .03931 lb/cu in

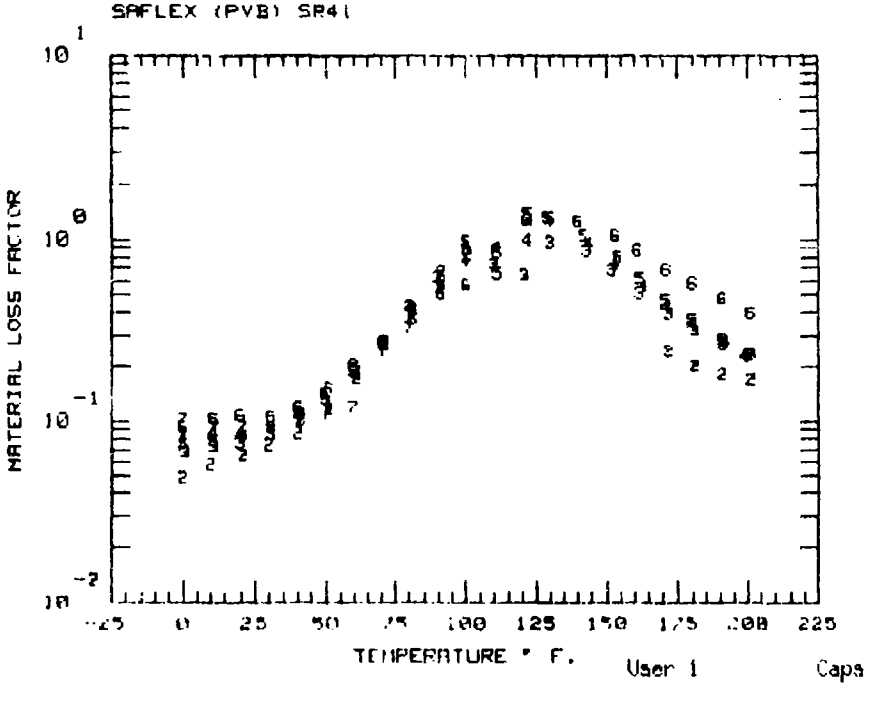
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	SHEAR MODULUS PSI	MATERIAL LOSS FACTOR
33	+200	2	235.4	243.2	.082650	1.3448E+02	.983395
34	+200	3	658.5	659.3	.049290	1.1168E+02	1.810339
35	+225	2	234.8	236.8	.034420	6.0767E+01	.843605
36	+250	2	234.3	233.8	.019160	3.0359E+01	.909350

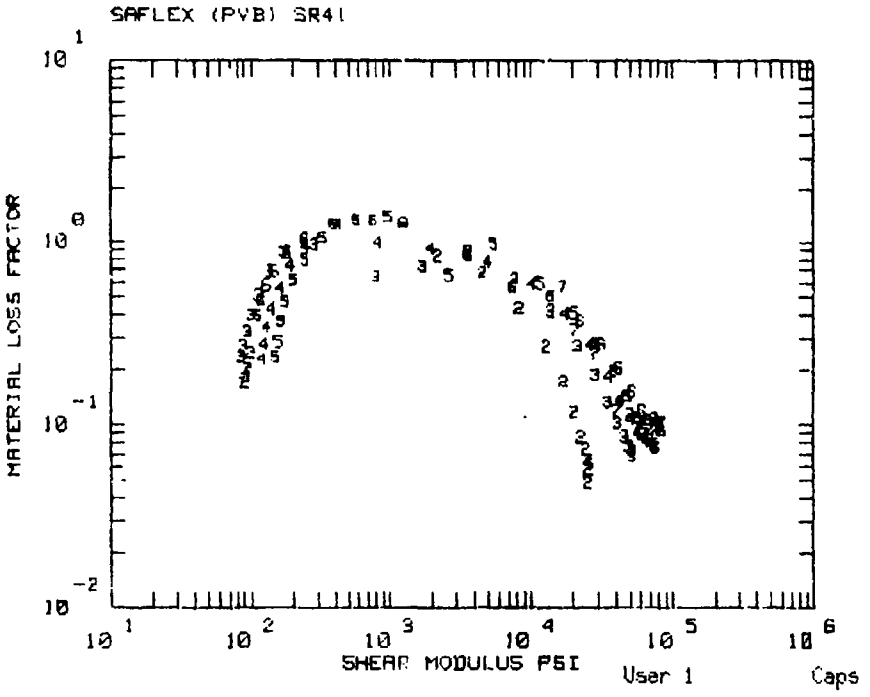

SAFLEX(PVB)SR41
TEMPERATURE DEG F (DELTA=25)
170
120
70
MODULUS
LOSS FACTOR
SHEAR MODULUS psi
FREQUENCY HERTZ
REDUCED FREQUENCY HERTZ


SAFLEX (PVB) SR41
FREQUENCY Hz
TEMPERATURE ° F.
User 1
Caps


SAFLEX (PVB) SR41
SHEAR MODULUS PSI
TEMPERATURE ° F.
User 1
Caps


SAFLEX (PVB) SR41
SYSTEM LOSS FACTOR
TEMPERATURE ° F.
User 1
Caps


SAFLEX (PVB) SR41
MATERIAL LOSS FACTOR
TEMPERATURE ° F.
User 1
Caps



MATERIAL CODE: ED0440
MATERIAL: SAFLEX(PVB)SR41

UNITS ARE ENGLISH
LOG(M)=LOG(ML)+(2LOG(MROM/ML))/(1+(FQROM/FR)^SLOPE)

TZERO	FQROM	MROM	SLOPE	ML
175.0	9.313E+04	2.352E+03	0.526	7.061E+01

LOG(ETA)=LOG(ETFROL)+((SH+SL)A+(SL-SH)(1-SQR(1+A^2)))C/2

TZERO	ETFROL	SL	SH	FROL	C
175.0	1.377	.445	-.420	3.026E+04	.500

LOG(FR)=LOG(F)-12(T-T0)/(525+T-T0)
A=(LOG(FR)-LOG(FROL))/C

MATERIAL CODE: ED0440
MATERIAL: SAFLEX(PVB)SR41
MANUFACTURER:
REMARKS: AUTO
DATE: 17 Mar 1988
ENTERED BY: TVG
BEAM MATERIAL: ALUMINUM
BEAM NUMBER: AL-060-5 & AL-060-6
BEAM TYPE: SANDWICH BEAM
BEAM LENGTH: 7 in
BEAM THICKNESS: .06 in
BEAM DENSITY: .1 lb/cu in
DAMPING MATERIAL THICKNESS: .02042 in
DAMPING MATERIAL DENSITY: .03826 lb/cu in

INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	SHEAR MODULUS PSI	MATERIAL LOSS FACTOR
1	+0	2	246.2	577.1	.004008	2.5438E+04	.048630
2	+0	4	1347.9	3025.1	.012437	6.5156E+04	.080473
3	+0	5	2236.4	4861.6	.015063	7.5832E+04	.074771
4	+0	6	3358.1	7057.3	.022930	8.4606E+04	.093298
5	+0	7	4694.8	9408.6	.030737	8.3422E+04	.102633
6	+1	3	687.8	1589.2	.007225	5.2049E+04	.067173
7	+10	2	245.8	576.9	.004625	2.6108E+04	.057629
8	+11	3	686.8	1586.9	.007785	5.1855E+04	.072381
9	+11	4	1345.6	3018.8	.013328	6.4584E+04	.085943
10	+11	5	2232.3	4843.4	.016017	7.4116E+04	.078479
11	+11	6	3352.1	7020.1	.025912	8.1859E+04	.103667
12	+11	7	4687.7	9347.1	.028633	8.0530E+04	.093955
13	+20	3	685.9	1581.2	.008457	4.9565E+04	.075890
14	+20	4	1343.7	3004.4	.013547	6.1738E+04	.084543
15	+20	6	3347.1	6934.0	.028410	7.4970E+04	.108057
16	+21	2	245.4	575.8	.005207	2.5850E+04	.064546
17	+21	5	2228.6	4805.6	.017635	6.9602E+04	.082989
18	+21	7	4681.3	9245.1	.029288	7.5503E+04	.093197
19	+30	2	245.1	574.0	.006192	2.4676E+04	.073923
20	+31	3	684.8	1572.4	.010150	4.6036E+04	.085970
21	+31	4	1341.4	2981.4	.015191	5.7203E+04	.089769
22	+31	5	2224.8	4750.6	.020916	6.3355E+04	.092746
23	+31	6	3341.1	6835.1	.029405	6.8123E+04	.106033
24	+31	7	4674.8	9093.9	.030838	6.8561E+04	.093907
25	+40	2	244.7	571.5	.007610	2.2972E+04	.085685
26	+40	4	1339.4	2949.1	.019468	5.1112E+04	.106328
27	+40	6	3336.2	6719.4	.034771	6.0829E+04	.118253
28	+41	3	683.8	1560.6	.013040	4.1488E+04	.101876
29	+41	5	2221.1	4680.7	.026253	5.6324E+04	.108394
30	+41	7	4668.4	8893.4	.035472	6.0379E+04	.102439
31	+50	3	682.9	1542.9	.019159	3.5479E+04	.133054
32	+50	4	1337.3	2902.8	.027559	4.3764E+04	.135749

MATERIAL CODE: ED0440
MATERIAL: SAFLEX(PVB)SR41
MANUFACTURER:
REMARKS: AUTO
DATE: 17 Mar 1988
ENTERED BY: TVG
BEAM MATERIAL: ALUMINUM
BEAM NUMBER: AL-060-5 & AL-060-6
BEAM TYPE: SANDWICH BEAM
BEAM LENGTH: 7 in
BEAM THICKNESS: .06 in
BEAM DENSITY: .1 lb/cu in
DAMPING MATERIAL THICKNESS: .02042 in
DAMPING MATERIAL DENSITY: .03826 lb/cu in

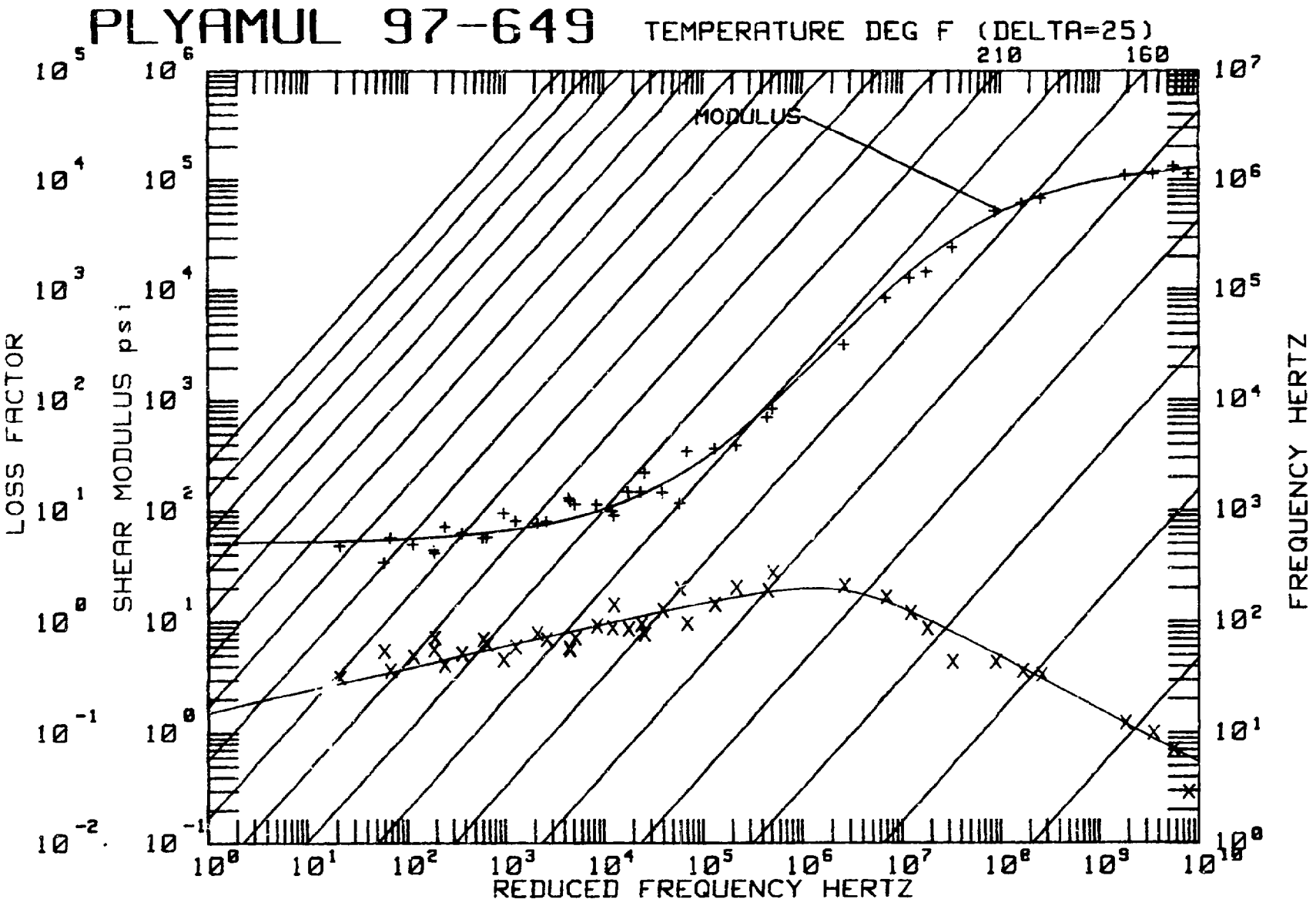
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	SHEAR MODULUS PSI	MATERIAL LOSS FACTOR
33	+50	5	2217.8	4584.6	.037548	4.8039E+04	.141752
34	+51	2	244.3	568.0	.011298	2.0647E+04	.116916
35	+51	6	3330.1	6555.0	.047973	5.1936E+04	.151649
36	+51	7	4662.0	8601.2	.041727	5.0355E+04	.112709
37	+60	3	682.0	1517.2	.031202	2.8698E+04	.186758
38	+60	5	2214.0	4449.1	.058104	3.8756E+04	.197148
39	+60	6	3325.2	6325.1	.069945	4.1834E+04	.202800
40	+60	7	4656.2	8263.1	.047468	4.1015E+04	.120520
41	+61	2	243.9	562.3	.019078	1.7243E+04	.172042
42	+61	4	1335.0	2836.5	.042692	3.5483E+04	.185028
43	+70	3	681.0	1478.4	.054223	2.1438E+04	.270223
44	+70	4	1333.1	2738.6	.072987	2.6504E+04	.271450
45	+71	2	243.6	553.2	.036042	1.3072E+04	.268156
46	+71	5	2209.9	4260.7	.092024	2.9230E+04	.278177
47	+71	6	3319.2	6030.1	.103363	3.1998E+04	.275931
48	+71	7	4649.1	7712.6	.103734	2.8989E+04	.248821
49	+80	2	243.2	537.3	.074551	8.4871E+03	.430253
50	+80	7	4643.3	7197.8	.140754	2.0889E+04	.332293
51	+81	3	679.9	1414.5	.104264	1.3978E+04	.418402
52	+81	4	1330.8	2592.1	.127236	1.7837E+04	.402928
53	+81	5	2206.2	4001.3	.149823	2.0131E+04	.407092
54	+81	6	3313.7	5636.7	.148543	2.2580E+04	.369549
55	+90	3	679.0	1310.7	.193400	7.8257E+03	.627214
56	+91	2	242.8	508.3	.155059	4.5451E+03	.673410
57	+91	4	1328.7	2355.6	.212484	1.0160E+04	.577787
58	+91	5	2202.4	3604.8	.234646	1.1708E+04	.591016
59	+91	6	3308.2	5112.1	.208015	1.4103E+04	.504122
60	+91	7	4636.2	6938.8	.230190	1.6947E+04	.564133
61	+100	3	678.0	1141.6	.320771	3.6393E+03	.889734
62	+100	4	1326.8	2029.7	.301443	4.9685E+03	.771059
63	+100	5	2199.1	3098.4	.355154	5.5205E+03	.963552
64	+100	6	3303.3	4474.6	.218204	7.6467E+03	.567359

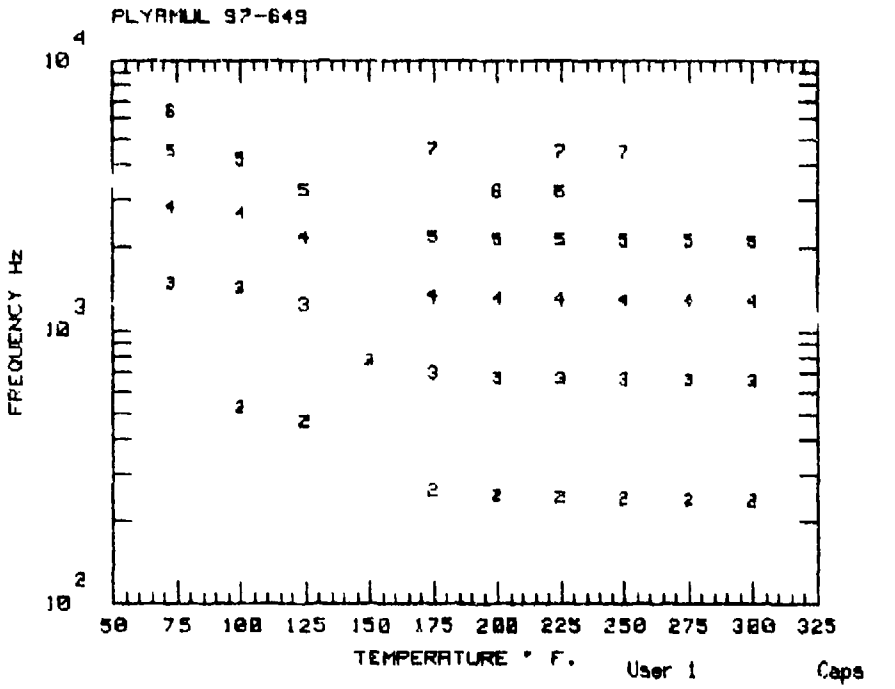
MATERIAL CODE: ED0440
MATERIAL: SAFLEX(PVB)SR41
MANUFACTURER:
REMARKS: AUTO
DATE: 17 Mar 1988
ENTERED BY: TVG
BEAM MATERIAL: ALUMINUM
BEAM NUMBER: AL-060-5 & AL-060-6
BEAM TYPE: SANDWICH BEAM
BEAM LENGTH: 7 in
BEAM THICKNESS: .06 in
BEAM DENSITY: .1 lb/cu in
DAMPING MATERIAL THICKNESS: .02042 in
DAMPING MATERIAL DENSITY: .03826 lb/cu in

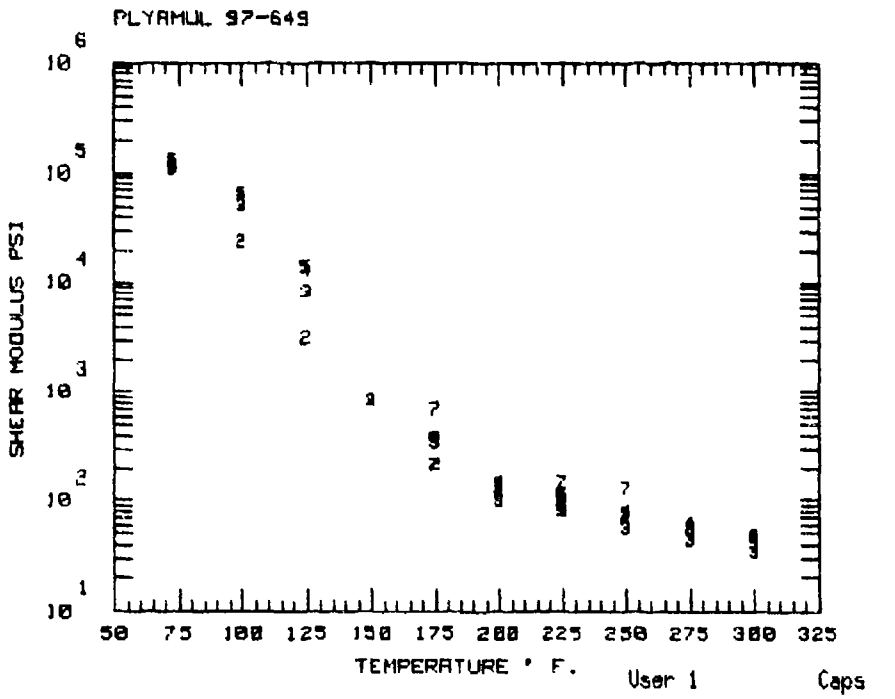
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	SHEAR MODULUS PSI	MATERIAL LOSS FACTOR
65	+101	2	242.5	456.9	.257586	2.2216E+03	.832719
66	+110	3	677.0	946.3	.281115	1.7351E+03	.730631
67	+111	4	1324.4	1667.6	.299756	1.9797E+03	.915197
68	+111	5	2195.0	2643.4	.198537	2.6645E+03	.649415
69	+111	6	3297.2	3921.5	.244713	3.6398E+03	.849973
70	+121	3	675.9	810.1	.193261	7.9545E+02	.640462
71	+122	4	1322.1	1462.6	.207381	8.3870E+02	.990757
72	+122	5	2190.9	2346.3	.223557	9.8276E+02	1.374473
73	+122	6	3291.2	3475.4	.185131	1.2732E+03	1.277191
74	+129	5	2188.2	2253.6	.143050	5.8085E+02	1.327617
75	+130	3	675.0	717.2	.151346	2.8554E+02	.963754
76	+130	4	1320.4	1375.0	.156466	4.1904E+02	1.250464
77	+130	6	3286.8	3359.7	.126678	7.6661E+02	1.319650
78	+140	6	3281.3	3270.4	.067356	3.9570E+02	1.262371
79	+142	5	2183.4	2191.3	.069306	3.2965E+02	1.049560
80	+143	3	673.7	691.7	.091457	1.7263E+02	.869721
81	+144	4	1317.5	1332.4	.075383	2.4439E+02	.947006
82	+152	3	672.8	682.7	.058932	1.3599E+02	.686341
83	+153	4	1315.6	1318.1	.046717	1.8937E+02	.735726
84	+153	6	3274.2	3228.7	.035817	2.4376E+02	1.053378
85	+154	5	2178.9	2167.3	.039942	2.4364E+02	.794973
86	+161	6	3269.8	3210.2	.022540	1.8181E+02	.875715
87	+162	3	671.8	676.8	.037324	1.1368E+02	.508038
88	+162	5	2175.9	2154.7	.025675	2.0104E+02	.610004
89	+163	4	1313.5	1309.3	.030008	1.5945E+02	.551549
90	+171	4	1311.8	1303.5	.020803	1.4085E+02	.427935
91	+171	5	2172.6	2145.9	.017360	1.7637E+02	.465370
92	+171	6	3264.3	3196.9	.014375	1.4658E+02	.685675
93	+172	2	239.9	253.9	.038245	9.9328E+01	.245112
94	+172	3	670.8	673.0	.026231	1.0124E+02	.395237
95	+180	4	1309.9	1299.4	.015402	1.3093E+02	.338285
96	+180	5	2169.2	2139.6	.012671	1.6312E+02	.364752

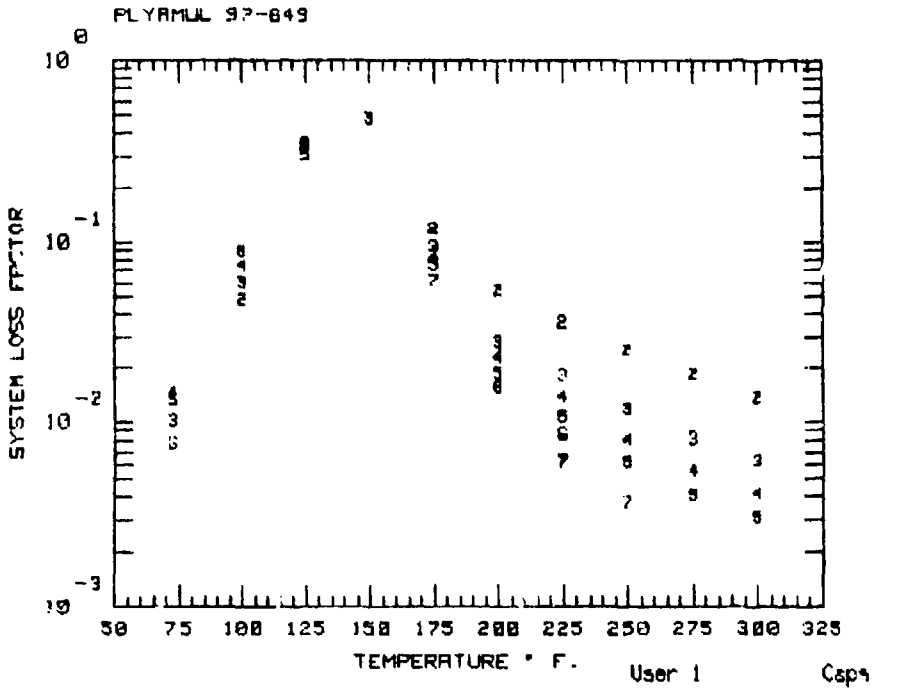
MATERIAL CODE: ED0440
MATERIAL: SAFLEX(PVB)SR41
MANUFACTURER:
REMARKS: AUTO
DATE: 17 Mar 1988
ENTERED BY: TVG
BEAM MATERIAL: ALUMINUM
BEAM NUMBER: AL-060-5 & AL-060-6
BEAM TYPE: SANDWICH BEAM
BEAM LENGTH: 7 in
BEAM THICKNESS: .06 in
BEAM DENSITY: .1 lb/cu in
DAMPING MATERIAL THICKNESS: .02042 in
DAMPING MATERIAL DENSITY: .03826 lb/cu in

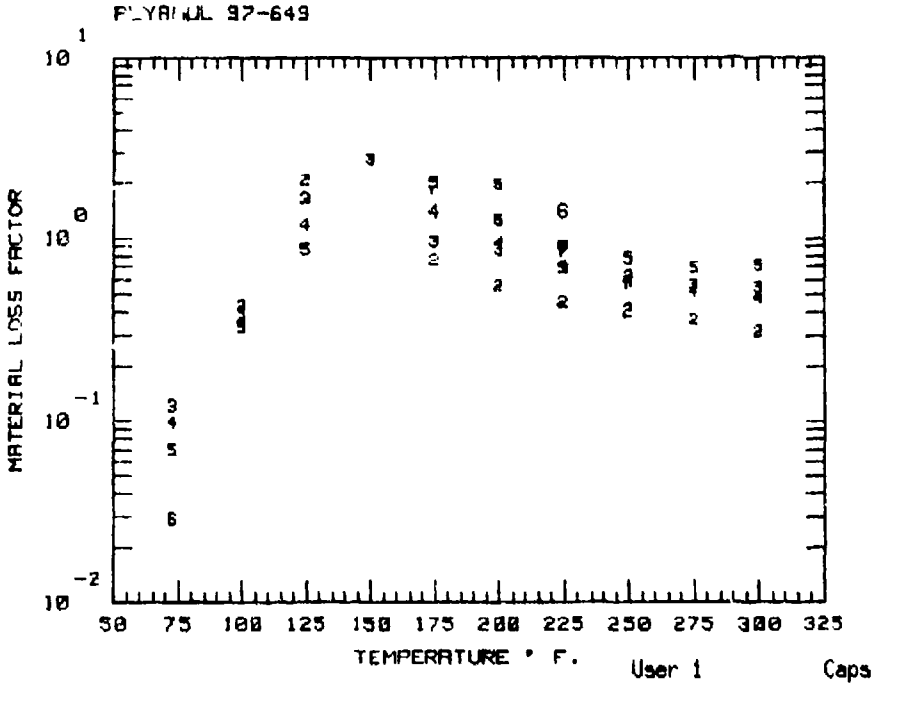
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	SHEAR MODULUS PSI	MATERIAL LOSS FACTOR
97	+180	6	3259.4	3188.0	.010669	1.2847E+02	.576829
98	+181	2	239.5	252.9	.030624	9.5802E+01	.201389
99	+181	3	669.9	670.7	.020053	9.4479E+01	.320957
100	+191	2	239.2	251.9	.026946	9.2494E+01	.181692
101	+191	3	668.9	668.5	.015887	8.9080E+01	.267603
102	+191	5	2165.1	2134.1	.009359	1.5615E+02	.279843
103	+191	6	3253.3	3179.7	.008148	1.1802E+02	.476825
104	+192	4	1307.3	1295.8	.012041	1.2561E+02	.273955
105	+199	4	1305.8	1293.0	.009604	1.1958E+02	.228357
106	+200	5	2161.7	2129.6	.007576	1.5025E+02	.234325
107	+201	2	238.8	251.1	.024840	9.0171E+01	.170455
108	+201	3	667.9	666.9	.013521	8.5933E+01	.234598
109	+201	6	3247.9	3173.1	.006425	1.1210E+02	.394091

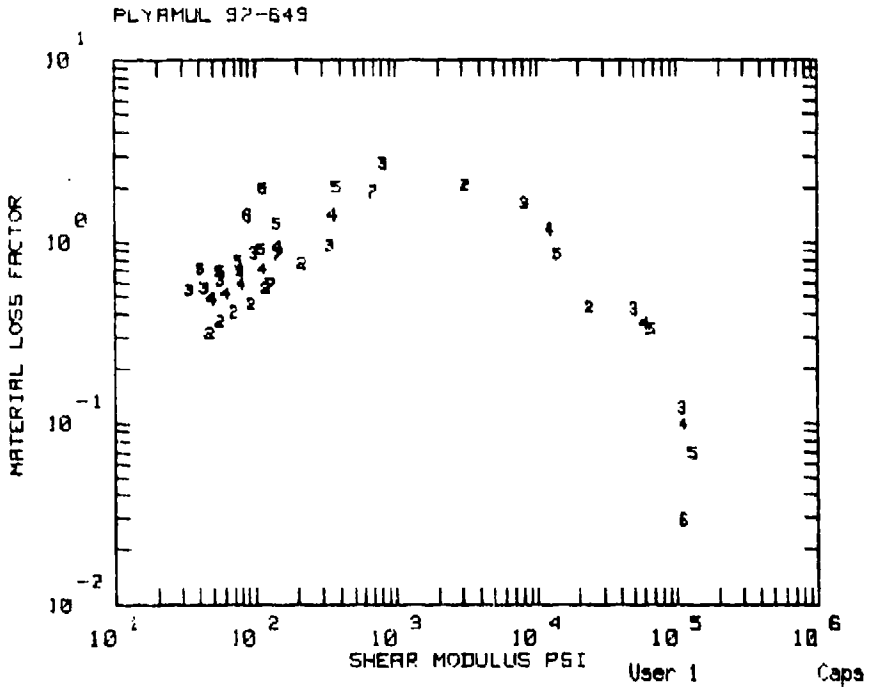

PLYAMUL 97-649
TEMPERATURE DEG F (DELTA=25)
210
160
MODULUS
LOSS FACTOR
SHEAR MODULUS psi
FREQUENCY HERTZ
REDUCED FREQUENCY HERTZ


PLYAMUL 97-649
FREQUENCY Hz
10^4
10^3
10^2
50 75 100 125 150 175 200 225 250 275 300 325
TEMPERATURE ° F.
User 1
Caps


PLYAMUL 97-649
SHEAR MODULUS PSI
10^6
10^5
10^4
10^3
10^2
10^1
50 75 100 125 150 175 200 225 250 275 300 325
TEMPERATURE ° F.
User 1
Caps


PLYAMUL 97-649
SYSTEM LOSS FACTOR
10^0
10^-1
10^-2
10^-3
50 75 100 125 150 175 200 225 250 275 300 325
TEMPERATURE ° F.
User 1
Caps


PLYAMUL 97-649
MATERIAL LOSS FACTOR
10^1
10^0
10^-1
10^-2
50 75 100 125 150 175 200 225 250 275 300 325
TEMPERATURE ° F.
User 1
Caps



MATERIAL CODE: ED0101
MATERIAL: 870106-3

UNITS ARE ENGLISH

LOG(M)=LOG(ML)+(2LOG(MROM/ML))/(1+(FQROM/FR)^SLOPE)

TZERO	FQROM	MROM	SLOPE	ML
250.0	1.700E+06	2.800E+03	0.450	5.100E+01

LOG(ETA)=LOG(ETFROL)+((SH+SL)A+(SL-SH)(1-SQR(1+A^2)))C/2

TZERO	ETFROL	SL	SH	FROL	C
250.0	1.912	.205	-.490	2.524E+06	.650

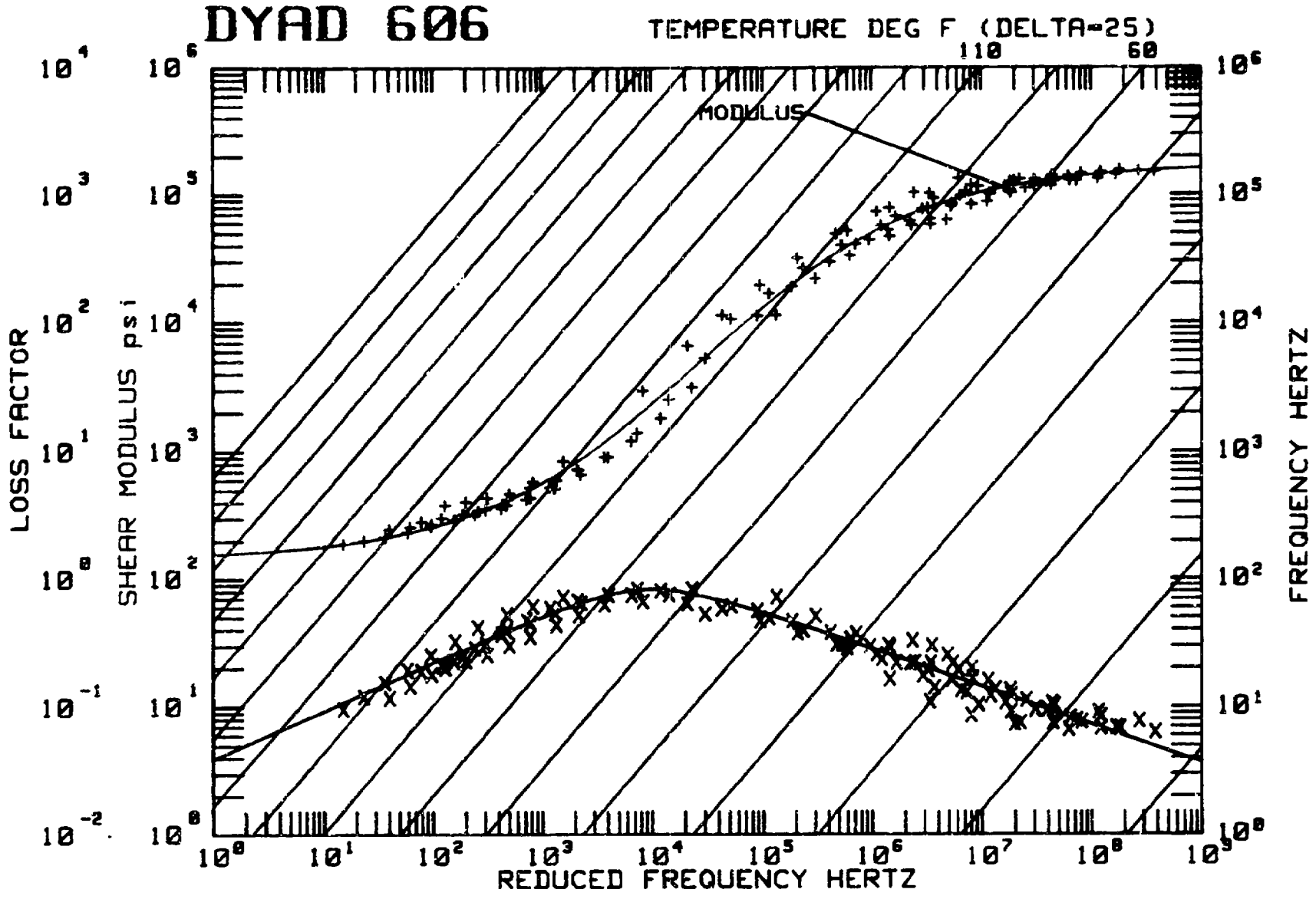
LOG(FR)=LOG(F)-12(T-T0)/(525+T-T0)
A=(LOG(FR)-LOG(FROL))/C

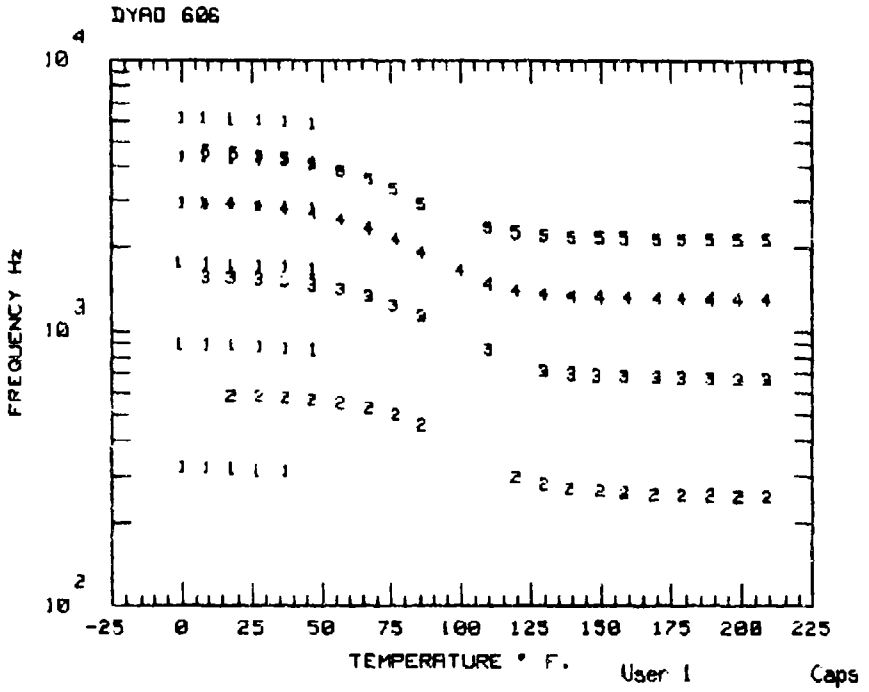
MATERIAL CODE: ED0101
MATERIAL: 870106-3
MANUFACTURER: UD
REMARKS: MAT. SHRANK IN ON SIDES
DATE: 9 Jun 1987
ENTERED BY: TCM
BEAM MATERIAL: STAINLESS STEEL
BEAM NUMBER: 7-103 & 7-104
BEAM TYPE: SANDWICH BEAM
BEAM LENGTH: 7 in
BEAM THICKNESS: .05983 in
BEAM DENSITY: .283 lb/cu in
DAMPING MATERIAL THICKNESS: .0126 in
DAMPING MATERIAL DENSITY: .04465 lb/cu in

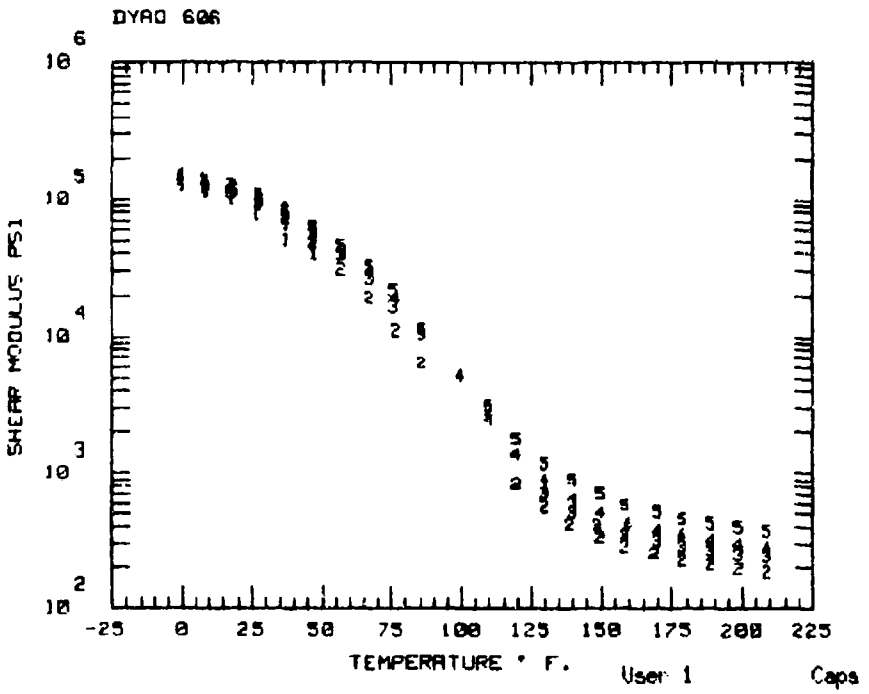
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	SHEAR MODULUS PSI	MATERIAL LOSS FACTOR
1	+73	3	673.8	1484.2	.010180	1.1025E+05	.121084
2	+73	4	1326.2	2813.0	.014430	1.1236E+05	.058840
3	+73	5	2198.1	4525.0	.013170	1.3121E+05	.069346
4	+73	6	3292.7	6352.0	.007770	1.1242E+05	.028787
5	+100	2	240.8	520.8	.048500	2.3962E+04	.431724
6	+100	3	672.0	1428.0	.059870	5.0953E+04	.428424
7	+100	4	1322.2	2670.0	.075060	5.9850E+04	.356425
8	+100	5	2191.4	4202.0	.088770	6.6680E+04	.329203
9	+125	2	240.1	467.0	.335330	3.1698E+03	2.061553
10	+125	3	670.4	1242.0	.348630	8.3364E+03	1.636476
11	+125	4	1318.5	2200.0	.351820	1.2602E+04	1.181461
12	+125	5	2185.2	3250.0	.303280	1.4304E+04	.865171
13	+150	3	668.8	776.0	.478090	8.2481E+02	2.721403
14	+175	2	238.8	259.6	.119030	2.1700E+02	.762636
15	+175	3	667.1	699.0	.094990	3.4256E+02	.959430
16	+175	4	1311.1	1341.0	.080540	3.6322E+02	1.406432
17	+175	5	2172.9	2199.0	.075630	3.8670E+02	1.997477
18	+175	7	4549.1	4590.0	.061440	6.9368E+02	1.883712
19	+200	2	238.2	249.2	.054130	1.2087E+02	.550871
20	+200	3	665.5	671.0	.028080	9.8455E+01	.875738
21	+200	4	1307.4	1313.0	.023000	1.4594E+02	.941996
22	+200	5	2166.7	2165.0	.018430	1.4372E+02	1.254730
23	+200	6	3245.7	3232.0	.015500	1.1540E+02	1.958053
24	+225	2	237.5	245.8	.035960	9.4280E+01	.451400
25	+225	3	663.8	667.2	.017930	7.8815E+01	.688579
26	+225	4	1303.7	1305.7	.013560	1.1308E+02	.707002
27	+225	5	2160.5	2155.4	.010620	1.1263E+02	.913155
28	+225	6	3236.4	3219.9	.008650	8.9420E+01	1.398545
29	+225	7	4524.4	4503.7	.006210	1.4642E+02	.857678
30	+225	7	4524.4	4503.7	.006150	1.4643E+02	.849372
31	+250	2	236.9	242.7	.025180	7.0897E+01	.405757
32	+250	3	662.2	663.1	.011750	5.6484E+01	.619789

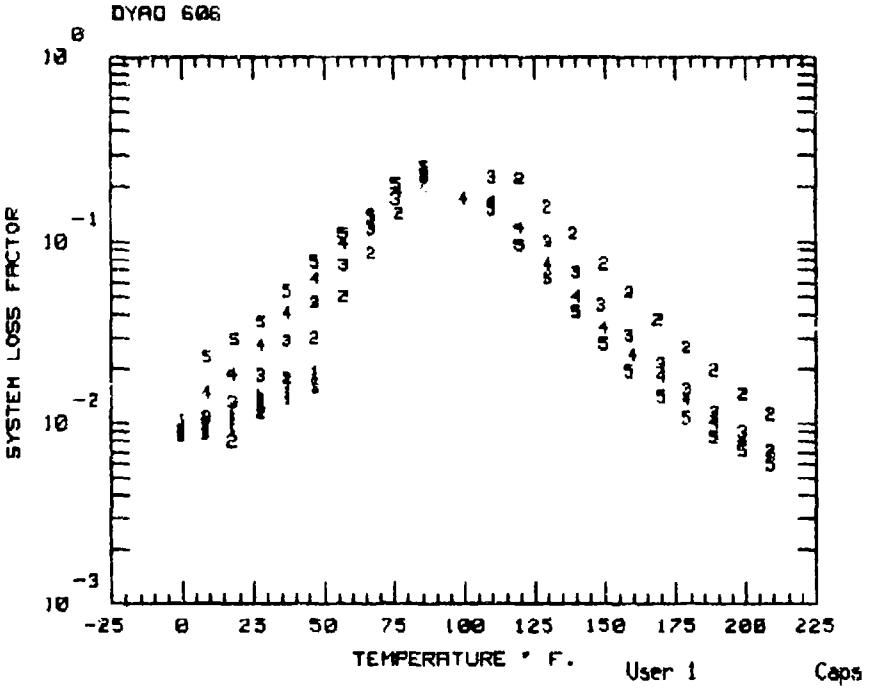
MATERIAL CODE: ED0101
MATERIAL: 870106-3
MANUFACTURER: UD
REMARKS: MAT. SHRANK IN ON SIDES
DATE: 9 Jun 1987
ENTERED BY: TCM
BEAM MATERIAL: STAINLESS STEEL
BEAM NUMBER: 7-103 & 7-104
BEAM TYPE: SANDWICH BEAM
BEAM LENGTH: 7 in
BEAM THICKNESS: .05983 in
BEAM DENSITY: .283 lb/cu in
DAMPING MATERIAL THICKNESS: .0126 in
DAMPING MATERIAL DENSITY: .04465 lb/cu in

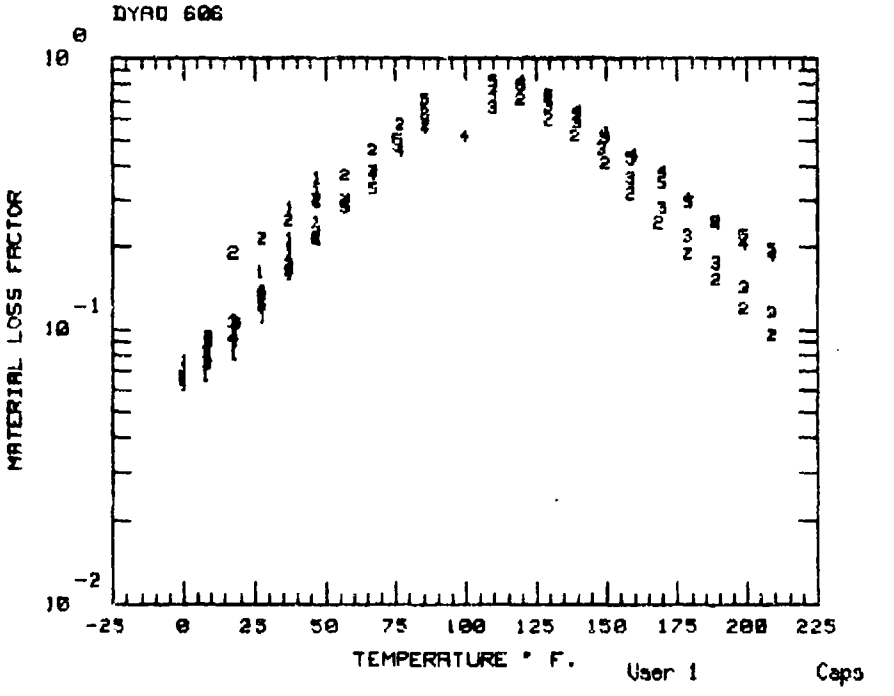
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	SHEAR MODULUS PSI	MATERIAL LOSS FACTOR
33	+250	4	1300.0	1298.4	.008090	8.0253E+01	.586195
34	+250	5	2154.3	2145.2	.006150	7.6095E+01	.773944
35	+250	7	4512.1	4489.5	.003690	1.2871E+02	.575912
36	+275	2	236.2	240.5	.018220	5.5829E+01	.363628
37	+275	3	660.5	660.0	.008180	4.3252E+01	.557089
38	+275	4	1296.3	1292.7	.005500	6.1812E+01	.512141
39	+275	5	2148.1	2136.8	.004060	5.5760E+01	.691140
40	+300	2	235.5	238.9	.013560	4.7391E+01	.313593
41	+300	3	658.9	657.3	.006260	3.3658E+01	.542574
42	+300	4	1292.7	1287.6	.004150	4.8991E+01	.483252
43	+300	5	2141.9	2129.0	.003090	4.0856E+01	.712172

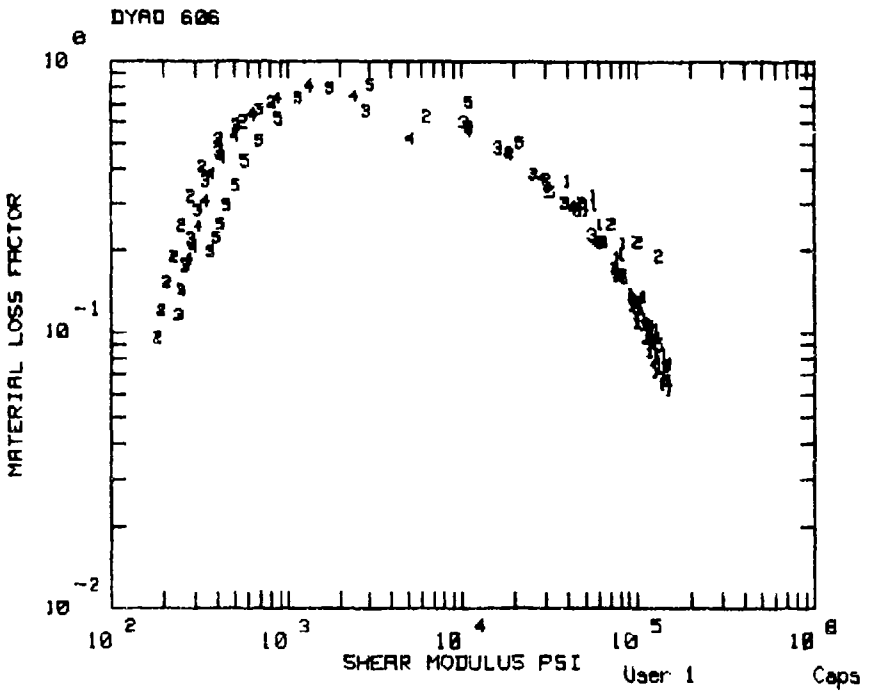

DYAD 606
TEMPERATURE DEG F (DELTA=25)
110
60
MODULUS
LOSS FACTOR
SHEAR MODULUS psi
FREQUENCY HERTZ
REDUCED FREQUENCY HERTZ
10^{-2}
10^{-1}
10^{0}
10^{1}
10^{2}
10^{3}
10^{4}
10^{5}
10^{6}
10^{7}
10^{8}
10^{9}


DYAD 606
FREQUENCY Hz
TEMPERATURE ° F.
User 1
Caps


DYAD 606
SHEAR MODULUS PSI
TEMPERATURE ° F.
User 1
Caps


DYAD 606
SYSTEM LOSS FACTOR
TEMPERATURE ° F.
User 1
Caps


DYAD 606
MATERIAL LOSS FACTOR
TEMPERATURE ° F.
User 1
Caps



MATERIAL CODE: CM0580
MATERIAL: DYAD 606

UNITS ARE ENGLISH
LOG(M)=LOG(ML)+(2LOG(MROM/ML))/(1+(FQROM/FR)^SLOPE)

TZERO	FQROM	MROM	SLOPE	ML
150.0	2.761E+04	5.021E+03	0.430	1.446E+02

LOG(ETA)=LOG(ETFROL)+((SH+SL)A+(SL-SH)(1-SQR(1+A^2)))C/2

TZERO	ETFROL	SL	SH	FROL	C
150.0	.834	.380	-.300	8.287E+03	.500

LOG(FR)=LOG(F)-12(T-T0)/(525+T-T0)
A=(LOG(FR)-LOG(FROL))/C

MATERIAL CODE: CM0580
MATERIAL: DYAD 606
MANUFACTURER: SOUNDCOAT
REMARKS: B FLEX ADHESIVE
DATE: 12 Jul 1988
ENTERED BY: TCM
BEAM MATERIAL: STAINLESS STEEL
BEAM NUMBER: SS-7-131 & SS-7-182
BEAM TYPE: SANDWICH BEAM
BEAM LENGTH: 7 in
BEAM THICKNESS: .06017 in
BEAM DENSITY: .283 lb/cu in
DAMPING MATERIAL THICKNESS: .01948 in
DAMPING MATERIAL DENSITY: .035 lb/cu in

INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	SHEAR MODULUS PSI	MATERIAL LOSS FACTOR
1	+0	1	330.3	319.9	.008445	1.2410E+05	.072043
2	-1	1	918.9	896.1	.008402	1.3718E+05	.065173
3	-1	1	1802.8	1765.7	.009115	1.4681E+05	.066978
4	+0	1	2990.1	2934.1	.009307	1.5198E+05	.066845
5	+0	1	4478.9	4387.2	.010399	1.4946E+05	.076284
6	+0	1	6250.2	6122.7	.008485	1.4880E+05	.062193
7	+9	1	330.0	318.4	.009328	1.1592E+05	.084179
8	+9	1	917.8	891.6	.009017	1.2872E+05	.073621
9	+9	1	1800.6	1756.9	.009607	1.3841E+05	.073961
10	+8	1	2987.1	2919.5	.009972	1.4297E+05	.075186
11	+8	1	4474.7	4365.6	.010693	1.4049E+05	.082425
12	+8	1	6244.2	6092.9	.008780	1.4002E+05	.067561
13	+18	1	329.6	315.5	.010493	9.9509E+04	.107861
14	+18	1	916.8	884.0	.011130	1.1284E+05	.101429
15	+18	1	1798.6	1742.4	.010602	1.2301E+05	.089937
16	+18	1	2983.5	2896.5	.011460	1.2842E+05	.094294
17	+18	1	4469.5	4330.8	.011972	1.2549E+05	.101248
18	+18	1	6236.6	6048.2	.009670	1.2657E+05	.080799
19	+27	1	329.3	311.7	.012510	7.6671E+04	.161765
20	+28	1	915.8	873.8	.012752	9.1555E+04	.139088
21	+28	1	1796.3	1722.8	.012836	1.0198E+05	.127617
22	+27	1	2980.2	2865.8	.014213	1.0821E+05	.135080
23	+28	1	4464.3	4286.0	.013644	1.0587E+05	.133204
24	+28	1	6229.1	5990.8	.011694	1.0888E+05	.110887
25	+37	1	328.9	307.2	.014881	5.0677E+04	.280689
26	+37	1	914.8	861.5	.014667	6.5625E+04	.215285
27	+37	1	1794.3	1699.1	.014766	7.6459E+04	.189051
28	+37	1	2976.5	2826.9	.017773	8.2843E+04	.213101
29	+37	1	4459.6	4230.9	.015777	8.1514E+04	.193592
30	+37	1	6222.3	5916.8	.013501	8.5625E+04	.157721
31	+47	1	913.7	848.9	.015636	4.0031E+04	.362615
32	+47	1	1792.1	1675.2	.016152	5.1384E+04	.296892

MATERIAL CODE: CM0580
MATERIAL: DYAD 606
MANUFACTURER: SOUNDCOAT
REMARKS: B FLEX ADHESIVE
DATE: 12 Jul 1988
ENTERED BY: TCM
BEAM MATERIAL: STAINLESS STEEL
BEAM NUMBER: SS-7-131 & SS-7-182
BEAM TYPE: SANDWICH BEAM
BEAM LENGTH: 7 in
BEAM THICKNESS: .06017 in
BEAM DENSITY: .283 lb/cu in
DAMPING MATERIAL THICKNESS: .01948 in
DAMPING MATERIAL DENSITY: .035 lb/cu in

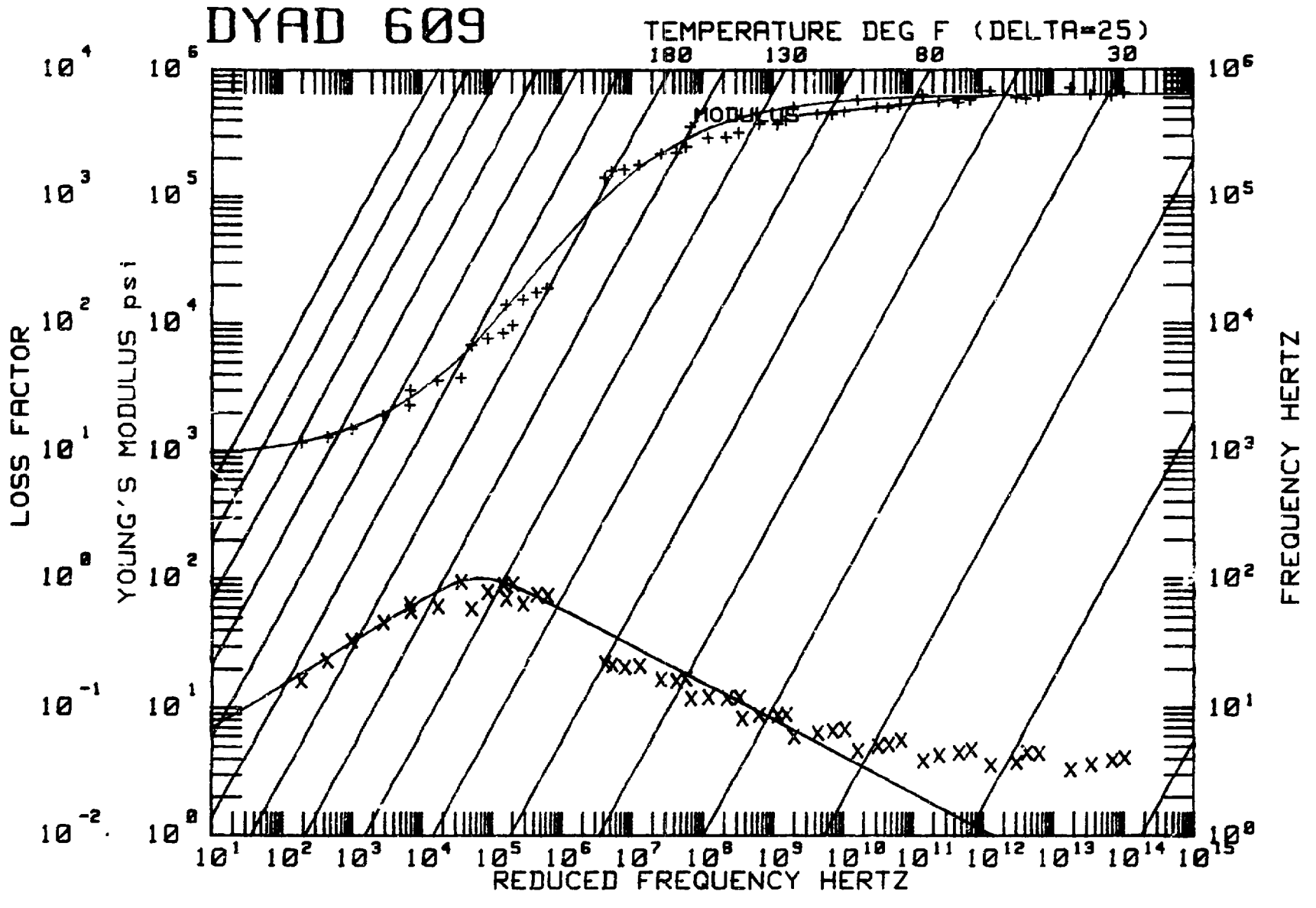
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	SHEAR MODULUS PSI	MATERIAL LOSS FACTOR
33	+47	1	2972.9	2785.0	.018862	5.5982E+04	.322300
34	+47	1	4454.4	4173.5	.017348	5.6827E+04	.294999
35	+47	1	6214.7	5838.1	.015872	6.1501E+04	.249575
36	+9	3	673.6	1565.9	.010825	1.2178E+05	.093404
37	+9	4	1319.4	2921.9	.014725	1.2598E+05	.077198
38	+9	5	2180.3	4581.7	.023184	1.3033E+05	.089544
39	+18	2	238.9	579.2	.007961	1.3083E+05	.191074
40	+18	3	672.7	1555.6	.013181	1.1116E+05	.105929
41	+18	4	1318.1	2892.6	.018803	1.1444E+05	.092440
42	+19	5	2178.1	4507.6	.028952	1.1583E+05	.104780
43	+28	2	238.7	575.3	.011402	1.0073E+05	.216735
44	+28	3	671.7	1537.9	.018511	9.4931E+04	.131932
45	+28	4	1316.7	2844.2	.026924	9.8169E+04	.120011
46	+28	5	2176.2	4412.7	.036368	1.0016E+05	.122121
47	+37	2	238.5	569.1	.017753	7.1691E+04	.251193
48	+37	3	670.8	1509.8	.028643	7.5113E+04	.172241
49	+37	4	1315.4	2771.1	.040703	7.9047E+04	.159657
50	+37	5	2174.2	4274.9	.053261	8.1685E+04	.163189
51	+47	2	238.3	559.7	.029470	4.8160E+04	.300892
52	+47	3	669.7	1468.6	.046462	5.5667E+04	.229077
53	+47	4	1313.9	2670.3	.062591	6.0172E+04	.213319
54	+47	5	2172.0	4087.7	.077333	6.2828E+04	.215019
55	+57	2	238.1	545.9	.050526	3.0984E+04	.370906
56	+57	3	668.7	1412.2	.074875	3.9132E+04	.301103
57	+57	4	1312.5	2536.7	.097176	4.3198E+04	.280645
58	+57	5	2169.9	3855.8	.110995	4.5939E+04	.284113
59	+67	2	237.9	525.5	.086021	1.9065E+04	.458643
60	+67	3	667.7	1334.6	.116689	2.5883E+04	.385571
61	+67	4	1311.1	2361.5	.140785	2.8983E+04	.371657
62	+67	5	2167.7	3589.0	.136764	3.2430E+04	.331198
63	+77	2	237.7	495.8	.143033	1.1136E+04	.570316
64	+76	3	666.8	1237.7	.170296	1.6475E+04	.481286

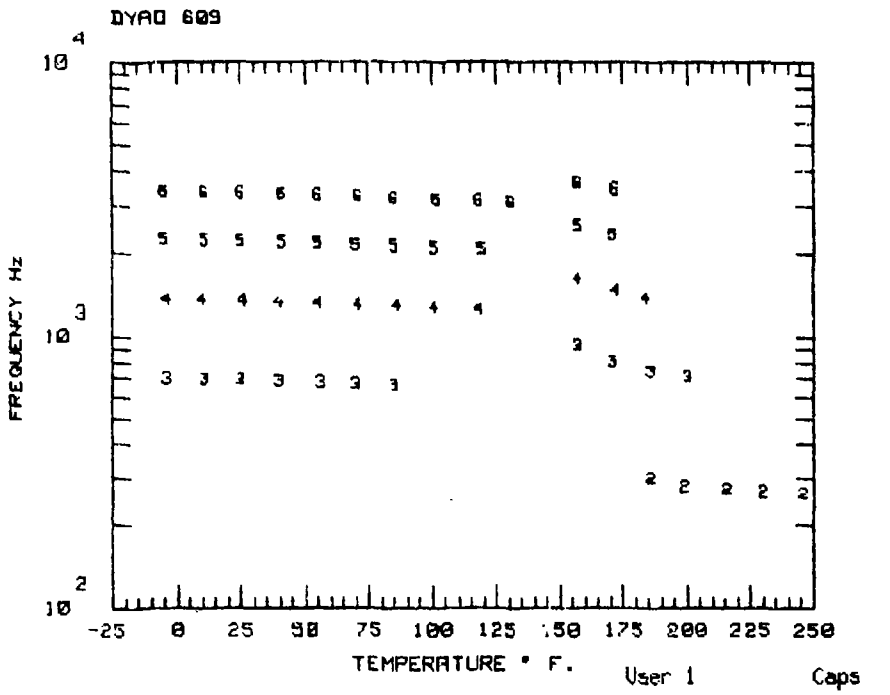
MATERIAL CODE: CM0580
MATERIAL: DYAD 606
MANUFACTURER: SOUNDCOAT
REMARKS: B FLEX ADHESIVE
DATE: 12 Jul 1988
ENTERED BY: TCM
BEAM MATERIAL: STAINLESS STEEL
BEAM NUMBER: SS-7-131 & SS-7-182
BEAM TYPE: SANDWICH BEAM
BEAM LENGTH: 7 in
BEAM THICKNESS: .06017 in
BEAM DENSITY: .283 lb/cu in
DAMPING MATERIAL THICKNESS: .01948 in
DAMPING MATERIAL DENSITY: .035 lb/cu in

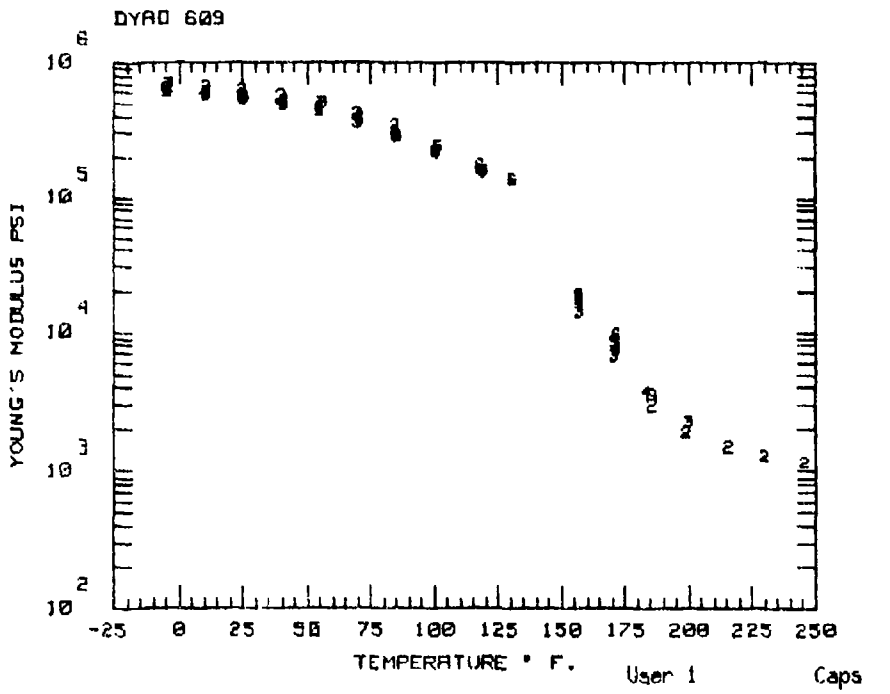
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	SHEAR MODULUS PSI	MATERIAL LOSS FACTOR
65	+77	4	1309.6	2162.2	.185420	1.8744E+04	.457506
66	+76	5	2165.7	3305.6	.205265	2.1568E+04	.502487
67	+86	2	237.5	454.4	.202100	6.4349E+03	.626765
68	+86	3	665.8	1132.7	.230630	1.0413E+04	.597792
69	+86	4	1308.3	1932.0	.222356	1.1007E+04	.554077
70	+86	5	2163.5	2894.8	.254663	1.1196E+04	.709829
71	+100	4	1306.3	1653.9	.172518	5.1792E+03	.519262
72	+110	3	663.3	858.1	.224280	2.8930E+03	.655543
73	+110	4	1304.9	1486.7	.165078	2.4679E+03	.740918
74	+110	5	2158.3	2386.7	.150562	3.0762E+03	.820043
75	+120	2	236.8	294.8	.220828	8.2691E+02	.707575
76	+120	4	1303.4	1404.3	.119679	1.3727E+03	.815666
77	+120	5	2156.1	2283.4	.095839	1.7746E+03	.795789
78	+130	2	236.6	277.7	.154886	5.6874E+02	.596749
79	+130	3	661.3	713.5	.099893	7.1090E+02	.666091
80	+130	4	1302.0	1364.0	.075747	8.8785E+02	.734643
81	+130	5	2153.9	2233.1	.062727	1.1829E+03	.733833
82	+139	2	236.4	266.7	.110080	4.1379E+02	.515446
83	+140	3	660.3	697.2	.067674	5.1747E+02	.580560
84	+140	4	1300.6	1342.7	.049801	6.4599E+02	.635361
85	+140	5	2151.8	2206.8	.041076	8.9201E+02	.616718
86	+150	2	236.2	260.6	.075405	3.3408E+02	.408606
87	+149	3	659.4	688.0	.044979	4.1479E+02	.463915
88	+150	4	1299.1	1329.8	.033568	5.0788E+02	.530524
89	+150	5	2149.6	2188.6	.027328	7.0123E+02	.510372
90	+159	2	236.0	256.8	.052331	2.8536E+02	.317991
91	+159	3	658.3	681.9	.030643	3.5274E+02	.362864
92	+160	4	1297.7	1321.3	.023753	4.2392E+02	.442148
93	+159	5	2147.6	2176.8	.019361	5.8396E+02	.427951
94	+169	2	235.8	254.2	.037483	2.5396E+02	.248657
95	+170	3	657.2	677.6	.021566	3.1416E+02	.282070
96	+170	4	1296.2	1315.7	.018503	3.7362E+02	.386460

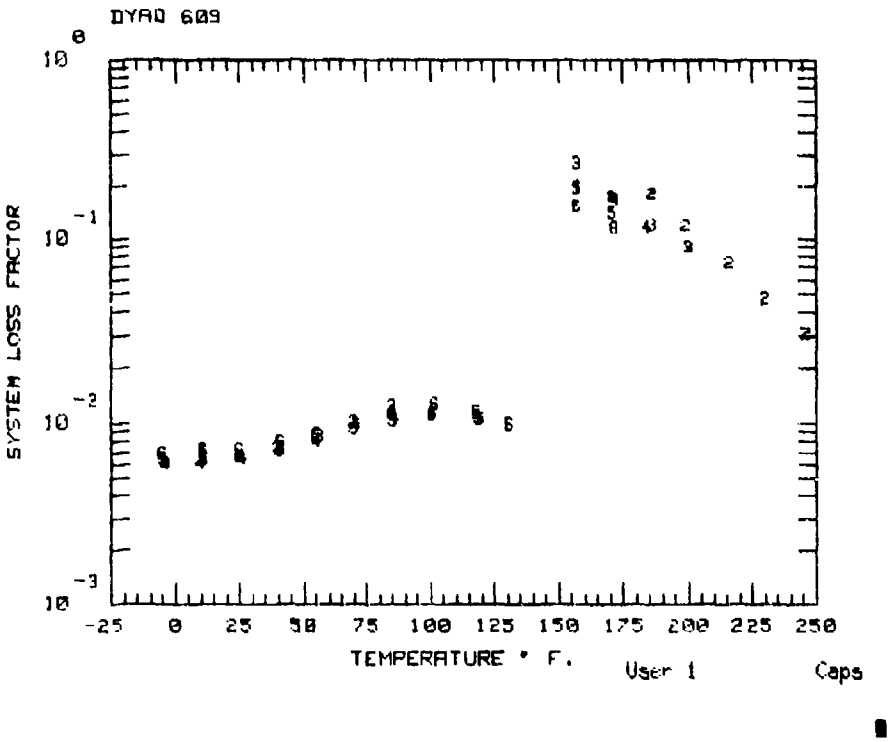
MATERIAL CODE: CM0580
MATERIAL: DYAD 606
MANUFACTURER: SOUNDCOAT
REMARKS: B FLEX ADHESIVE
DATE: 12 Jul 1988
ENTERED BY: TCM
BEAM MATERIAL: STAINLESS STEEL
BEAM NUMBER: SS-7-131 & SS-7-182
BEAM TYPE: SANDWICH BEAM
BEAM LENGTH: 7 in
BEAM THICKNESS: .06017 in
BEAM DENSITY: .283 lb/cu in
DAMPING MATERIAL THICKNESS: .01948 in
DAMPING MATERIAL DENSITY: .035 lb/cu in

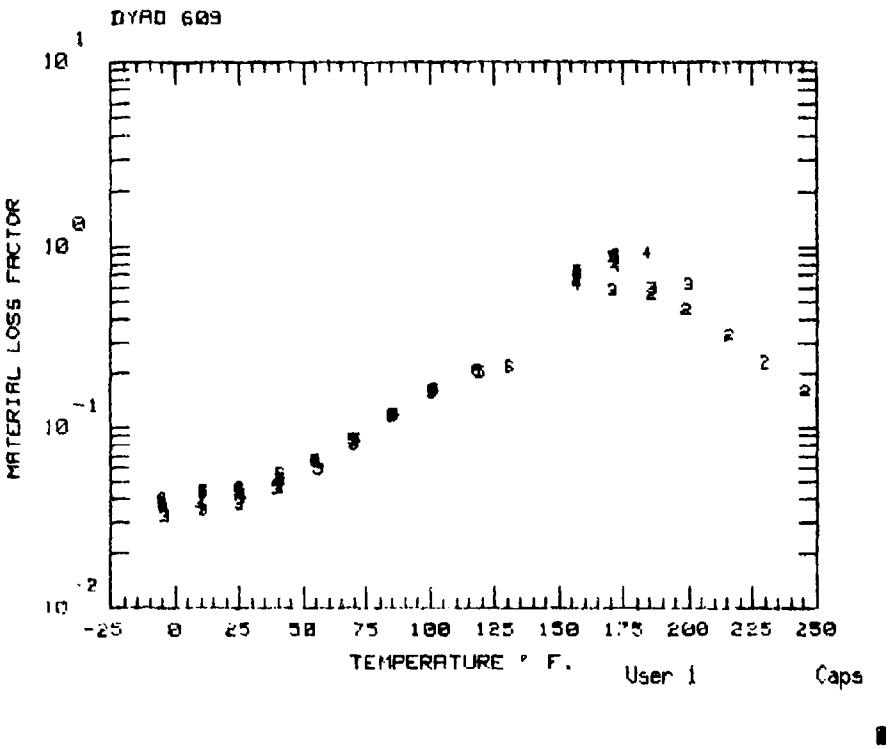
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	SHEAR MODULUS PSI	MATERIAL LOSS FACTOR
97	+170	5	2145.2	2168.7	.013995	5.1563E+02	.346984
98	+179	2	235.6	252.0	.026390	2.2801E+02	.190287
99	+179	3	656.3	674.3	.015531	2.8474E+02	.221285
100	+179	4	1294.9	1312.2	.013617	3.4717E+02	.304044
101	+179	5	2143.3	2162.0	.010689	4.5971E+02	.294915
102	+189	2	235.4	250.5	.019799	2.1041E+02	.152068
103	+189	3	655.3	671.6	.011601	2.6459E+02	.176124
104	+189	4	1293.5	1308.2	.010109	3.1696E+02	.245359
105	+189	5	2141.1	2157.0	.008443	4.2599E+02	.249980
106	+199	2	235.2	249.2	.014642	1.9657E+02	.118700
107	+199	3	654.3	669.6	.008999	2.5178E+02	.142514
108	+199	4	1292.1	1305.0	.008001	2.9544E+02	.207081
109	+199	5	2138.9	2152.5	.007106	3.9798E+02	.224073
110	+209	2	235.0	248.3	.011228	1.8683E+02	.094782
111	+209	3	653.2	667.8	.007039	2.4247E+02	.115047
112	+209	4	1290.6	1302.1	.006782	2.7823E+02	.185409
113	+209	5	2136.7	2148.1	.005914	3.7261E+02	.198237

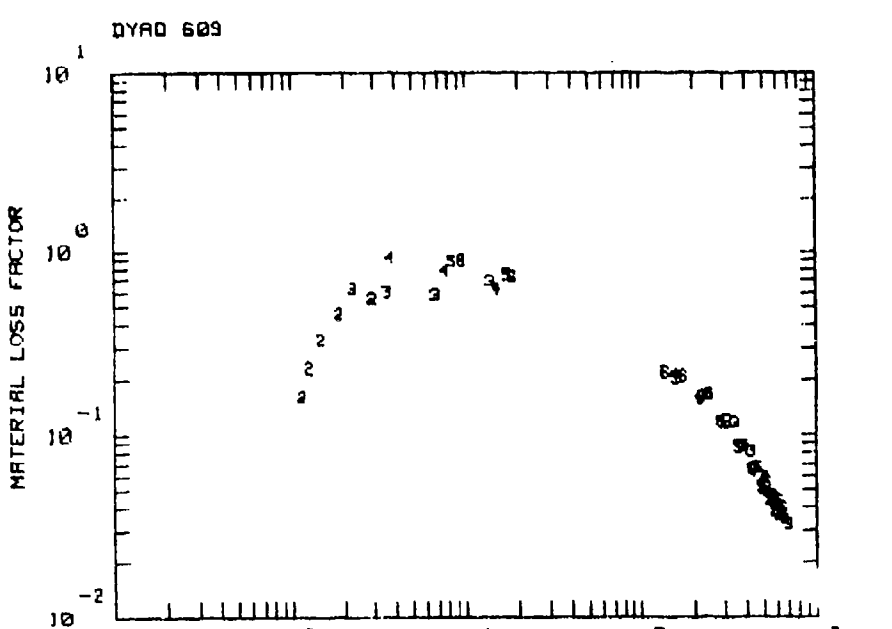

DYAD 609
TEMPERATURE DEG F (DELTA=25)
180
130
80
30
MODULUS
LOSS FACTOR
YOUNG'S MODULUS psi
FREQUENCY HERTZ
REDUCED FREQUENCY HERTZ


DYAD 609
FREQUENCY Hz
TEMPERATURE ° F.
User 1
Caps


DYAD 609
YOUNG'S MODULUS PSI
TEMPERATURE ° F.
User 1
Caps


DYAD 609
SYSTEM LOSS FACTOR
TEMPERATURE ° F.
User 1
Caps


DYAD 609
MATERIAL LOSS FACTOR
TEMPERATURE ° F.
User 1
Caps



MATERIAL CODE: CM_442
MATERIAL: DYAD 609

UNITS ARE ENGLISH
LOG(M)=LOG(ML)+(2LOG(MROM/ML))/(1+(FQROM/FR)^SLOPE)

TZERO	FQROM	MROM	SLOPE	ML
240.0	4.044E+05	2.384E+04	0.394	8.817E+02

LOG(ETA)=LOG(ETFROL)+((SH+SL)A+(SL-SH)(1-SQR(1+A^2)))C/2

TZERO	ETFROL	SL	SH	FROL	C
240.0	1.019	.340	-.290	6.095E+04	.400

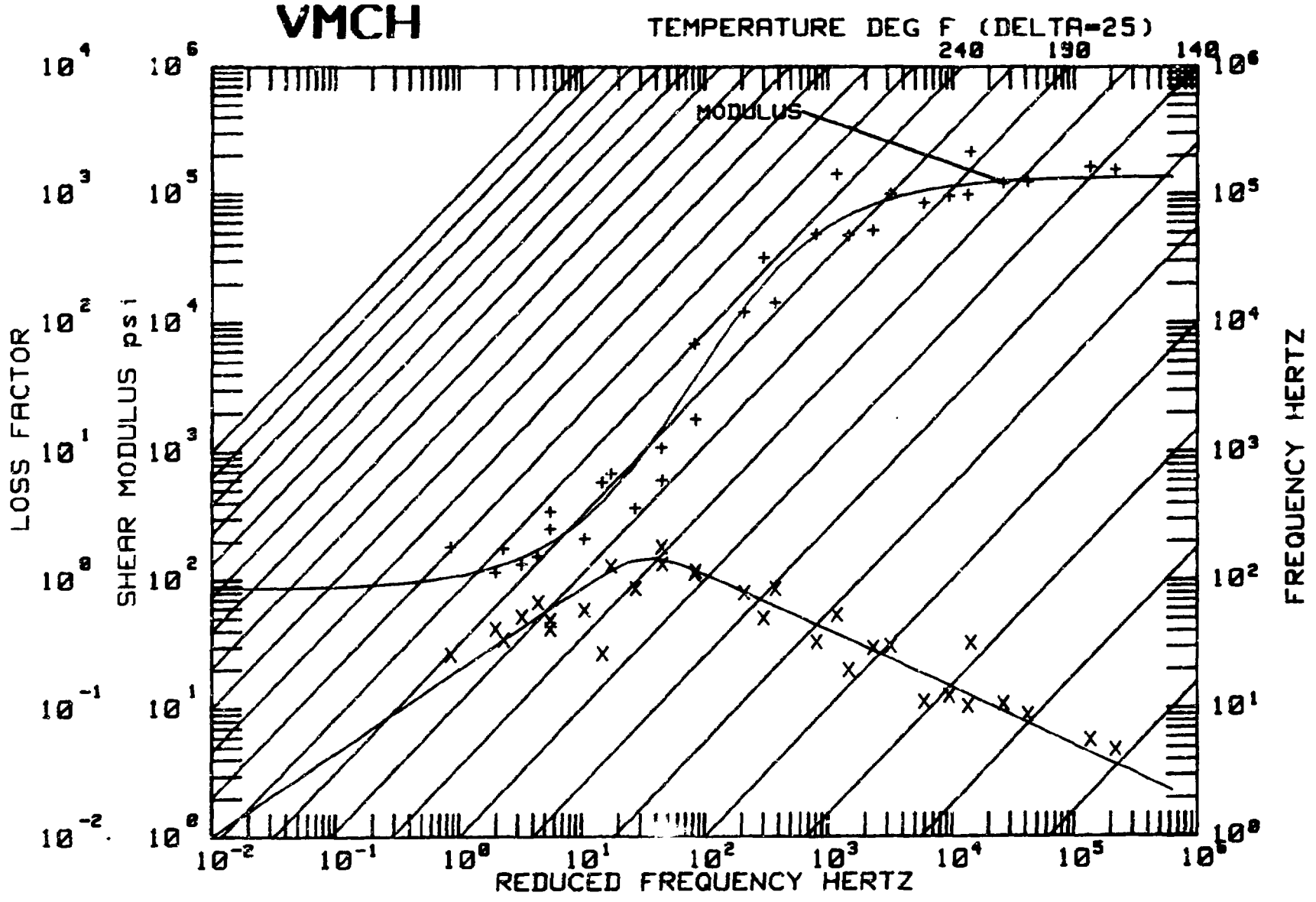
LOG(FR)=LOG(F)-12(T-T0)/(525+T-T0)
A=(LOG(FR)-LOG(FROL))/C

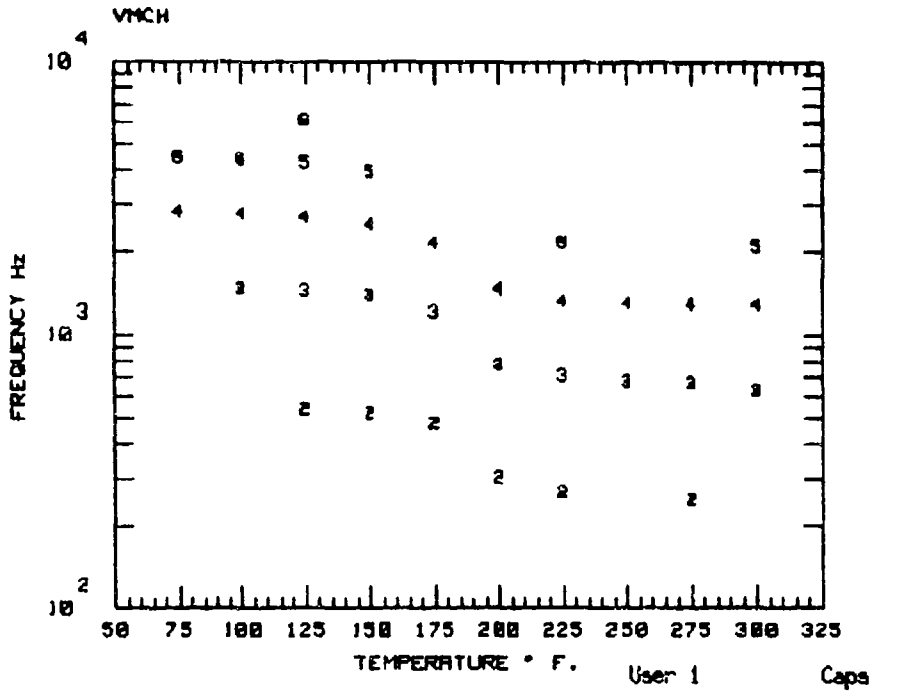
MATERIAL CODE: CM_442
MATERIAL: DYAD 609
MANUFACTURER: UDRI
REMARKS:
DATE: 18 Mar 1988
ENTERED BY: BJF
BEAM MATERIAL: STAINLESS STEEL
BEAM NUMBER: SS 7-103 & SS 7-104
BEAM TYPE: SANDWICH BEAM
BEAM LENGTH: 7 in
BEAM THICKNESS: .05983 in
BEAM DENSITY: .283 lb/cu in
DAMPING MATERIAL THICKNESS: .0238 in
DAMPING MATERIAL DENSITY: .04 lb/cu in

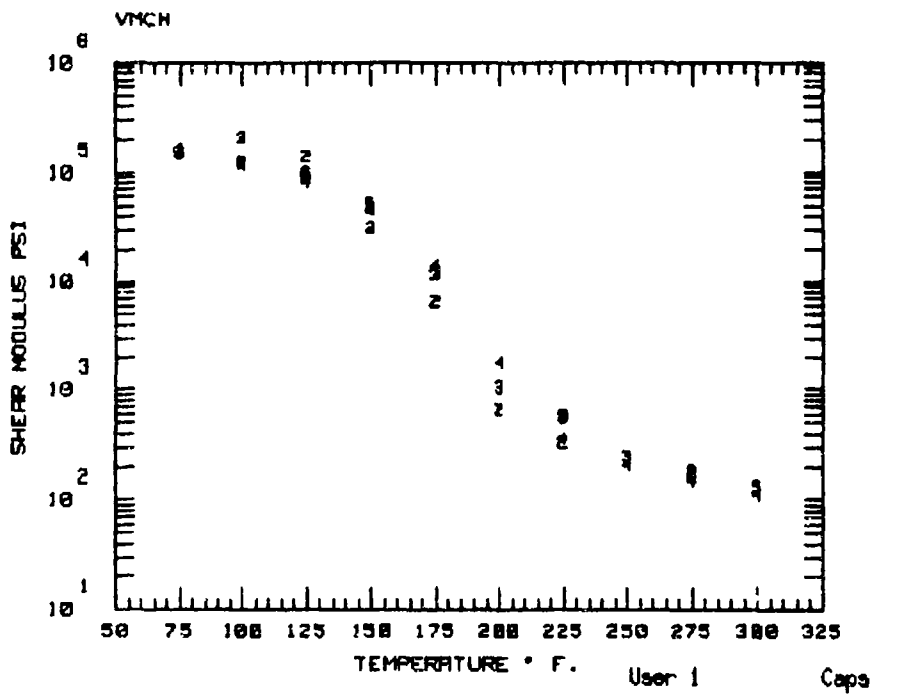
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	YOUNG'S MODULUS PSI	MATERIAL LOSS FACTOR
1	-5	5	2180.3	2258.7	.006326	6.0975E+05	.038128
2	-5	6	3257.0	3388.0	.006883	6.4233E+05	.039920
3	-4	3	662.9	697.4	.006119	7.0305E+05	.032199
4	-4	4	1314.9	1365.5	.005986	6.2355E+05	.035269
5	+10	4	1312.9	1357.6	.006018	5.9079E+05	.036929
6	+11	3	662.3	693.5	.006402	6.6738E+05	.035028
7	+11	5	2176.4	2246.0	.007043	5.7912E+05	.044117
8	+11	6	3251.5	3368.9	.007216	6.1071E+05	.043451
9	+25	3	661.8	688.9	.006587	6.2430E+05	.037928
10	+25	5	2173.0	2231.4	.006662	5.4165E+05	.043951
11	+25	6	3246.7	3344.8	.007294	5.6742E+05	.046491
12	+26	4	1310.6	1348.3	.006474	5.5200E+05	.041850
13	+40	3	661.2	683.2	.007365	5.7039E+05	.045515
14	+40	4	1308.5	1337.0	.007071	5.0181E+05	.049312
15	+41	5	2169.1	2213.2	.007183	4.9452E+05	.050935
16	+41	6	3241.2	3318.1	.008041	5.2020E+05	.054875
17	+55	4	1306.4	1323.3	.008057	4.4016E+05	.062529
18	+55	5	2165.7	2191.1	.008237	4.3455E+05	.064936
19	+55	6	3236.4	3285.3	.008809	4.5948E+05	.066500
20	+56	3	660.6	676.1	.008584	5.0292E+05	.058688
21	+70	3	660.0	667.8	.010283	4.2384E+05	.081012
22	+70	5	2162.1	2165.4	.009359	3.6477E+05	.085508
23	+71	4	1304.1	1306.8	.009522	3.6636E+05	.086227
24	+71	6	3230.9	3247.1	.010032	3.8952E+05	.086924
25	+85	3	659.5	659.5	.012409	3.4623E+05	.116180
26	+85	5	2158.5	2137.4	.010477	2.8926E+05	.117106
27	+85	6	3226.1	3205.7	.011313	3.1305E+05	.118368
28	+86	4	1301.9	1289.2	.010652	2.8753E+05	.119084
29	+101	4	1299.8	1272.7	.011286	2.1537E+05	.163460
30	+101	5	2154.6	2110.8	.011161	2.1998E+05	.159354
31	+102	6	3220.3	3166.9	.012785	2.4502E+05	.166150
32	+118	4	1297.3	1258.1	.010812	1.5540E+05	.211357

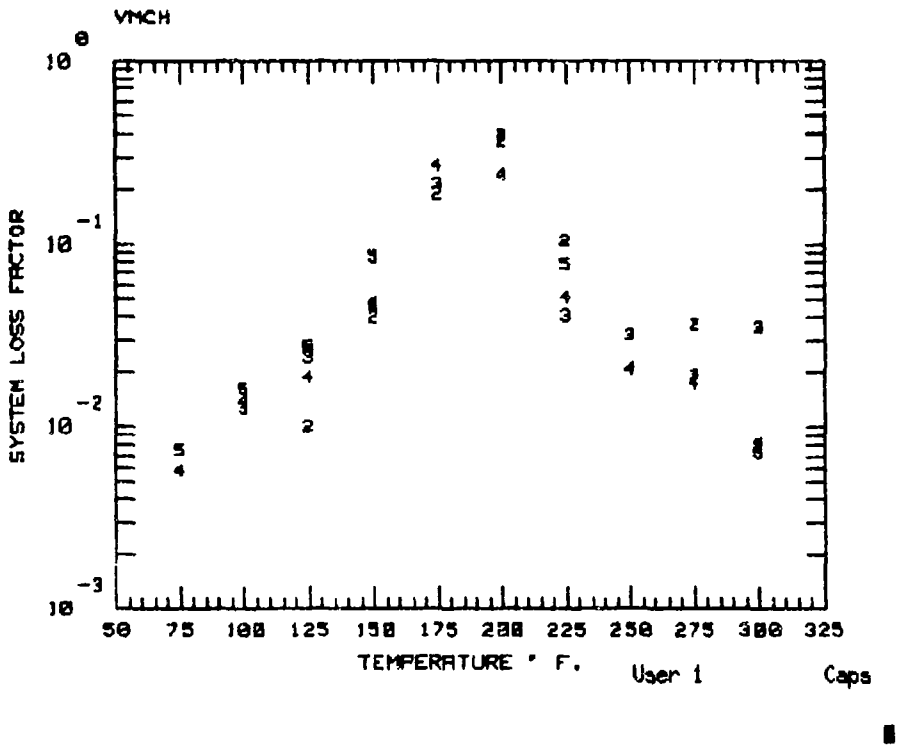
MATERIAL CODE: CM_442
MATERIAL: DYAD 609
MANUFACTURER: UDRI
REMARKS:
DATE: 18 Mar 1988
ENTERED BY: BJF
BEAM MATERIAL: STAINLESS STEEL
BEAM NUMBER: SS 7-103 & SS 7-104
BEAM TYPE: SANDWICH BEAM
BEAM LENGTH: 7 in
BEAM THICKNESS: .05983 in
BEAM DENSITY: .283 lb/cu in
DAMPING MATERIAL THICKNESS: .0238 in
DAMPING MATERIAL DENSITY: .04 lb/cu in

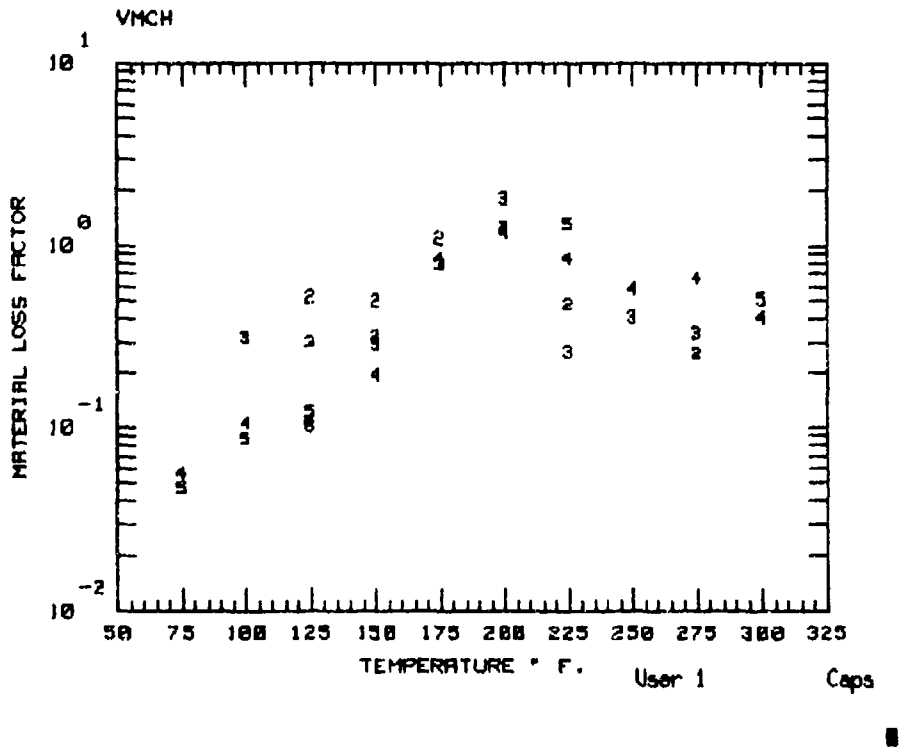
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	YOUNG'S MODULUS PSI	MATERIAL LOSS FACTOR
33	+118	6	3214.8	3126.3	.011741	1.7415E+05	.208374
34	+119	5	2150.2	2086.4	.010648	1.5973E+05	.203849
35	+131	6	3210.4	3103.7	.009929	1.3763E+05	.219288
36	+157	3	668.3	928.8	.267467	1.3829E+04	.688079
37	+157	4	1313.8	1624.9	.199618	1.5136E+04	.627944
38	+157	5	2177.3	2546.0	.192577	1.7281E+04	.741308
39	+157	6	3261.6	3658.8	.152846	1.8645E+04	.726074
40	+171	3	667.4	807.4	.172940	6.7205E+03	.578564
41	+171	5	2173.8	2350.4	.139755	8.3471E+03	.883436
42	+172	4	1311.6	1475.8	.166219	7.6132E+03	.777570
43	+172	6	3256.1	3450.2	.114672	9.5725E+03	.898611
44	+184	4	1309.8	1385.3	.115866	3.7051E+03	.930694
45	+186	2	238.5	296.5	.182541	2.9565E+03	.552457
46	+186	3	666.4	742.0	.121254	3.5335E+03	.599871
47	+199	2	238.2	277.9	.118560	1.8877E+03	.451223
48	+200	3	665.5	712.5	.090730	2.2619E+03	.625103
49	+216	2	237.7	269.1	.074192	1.4842E+03	.327128
50	+230	2	237.4	264.4	.047251	1.2785E+03	.229979
51	+246	2	237.0	261.4	.030749	1.1576E+03	.160162

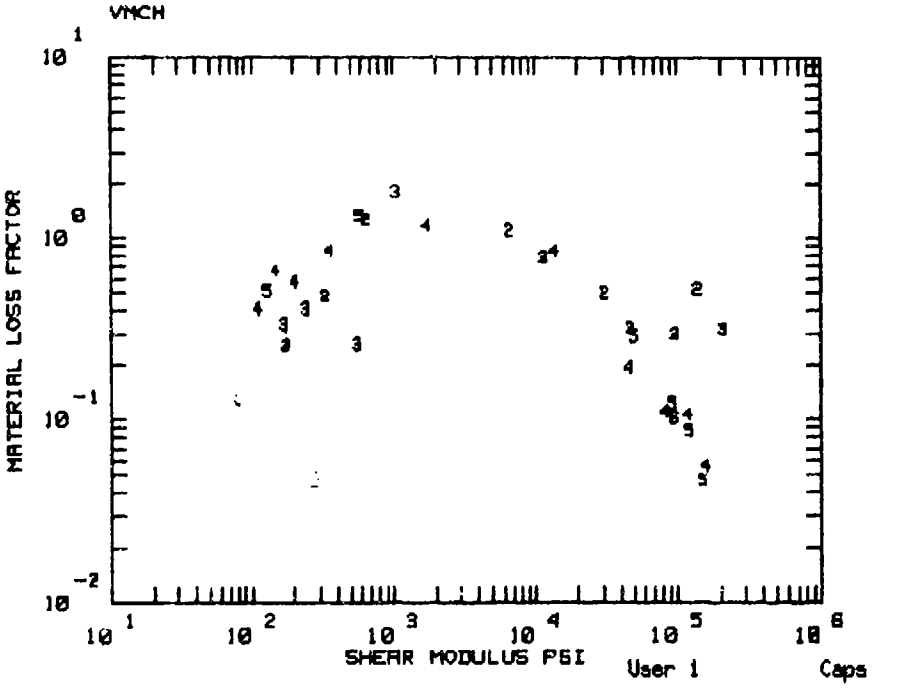

VMCH
TEMPERATURE DEG F (DELTA=25)
240
190
140
MODULUS
LOSS FACTOR
SHEAR MODULUS psi
FREQUENCY HERTZ
REDUCED FREQUENCY HERTZ
10^{-2} 10^{-1} 10^{0} 10^{1} 10^{2} 10^{3} 10^{4} 10^{5} 10^{6}


VMCH
FREQUENCY Hz
10^4
10^3
10^2
50 75 100 125 150 175 200 225 250 275 300 325
TEMPERATURE ° F.
User 1
Caps


VMCH
SHEAR MODULUS PSI
10^6
10^5
10^4
10^3
10^2
10^1
50 75 100 125 150 175 200 225 250 275 300 325
TEMPERATURE ° F.
User 1
Caps


VMCH
SYSTEM LOSS FACTOR
TEMPERATURE ° F.
User 1
Caps


VMCH
MATERIAL LOSS FACTOR
TEMPERATURE ° F.
User 1
Caps



MATERIAL CODE: ED0124
MATERIAL: SD861219-6

UNITS ARE ENGLISH
LOG(M)=LOG(ML)+(2LOG(MROM/ML))/(1+(FQROM/FR)^SLOPE)

TZERO	FQROM	MROM	SLOPE	ML
140.0	8.000E+01	3.400E+03	0.780	8.500E+01

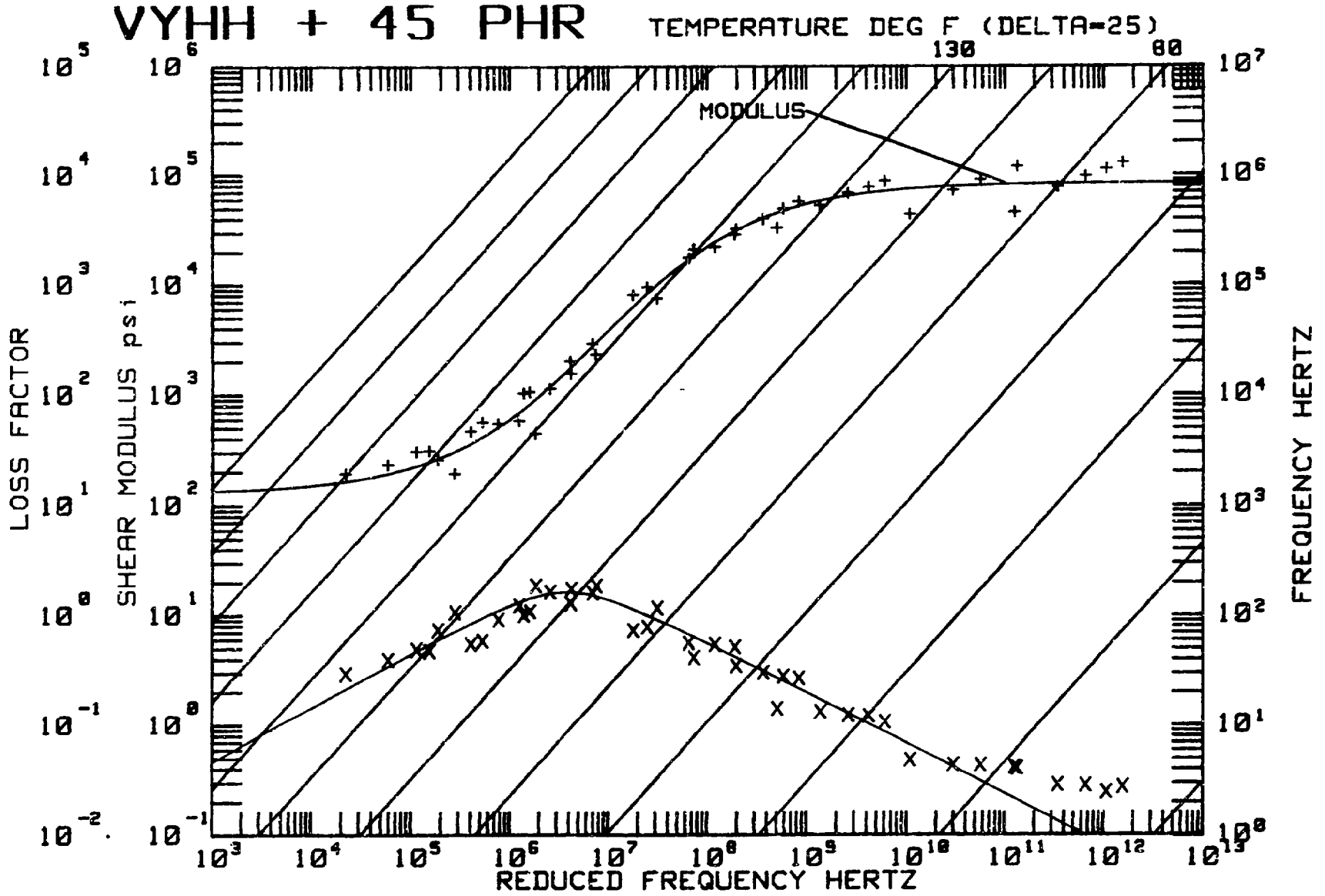
LOG(ETA)=LOG(ETFROL)+((SH+SL)A+(SL-SH)(1-SQR(1+A^2)))C/2

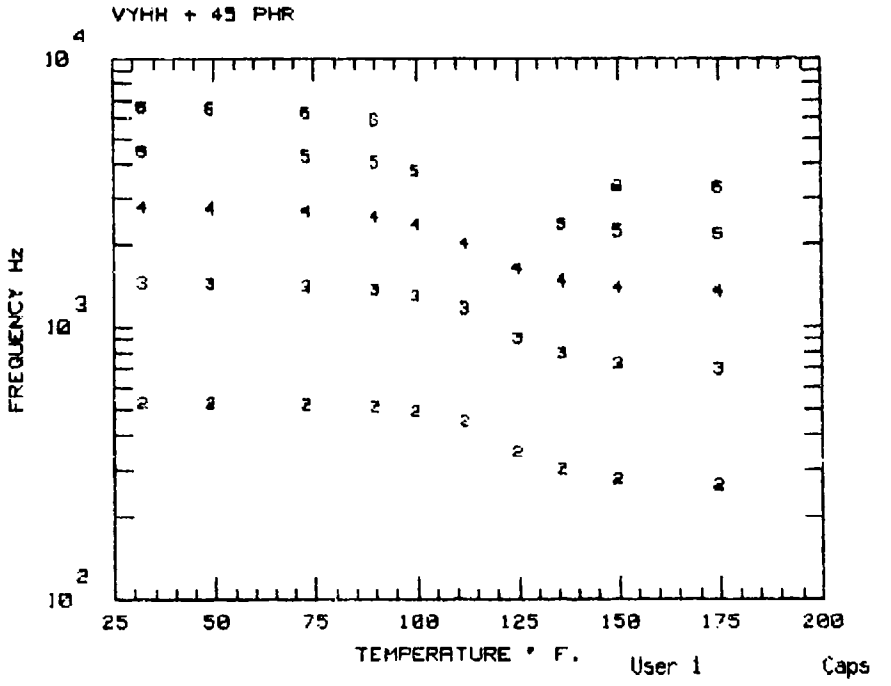
TZERO	ETFROL	SL	SH	FROL	C
140.0	1.500	.650	-.450	3.200E+01	.200

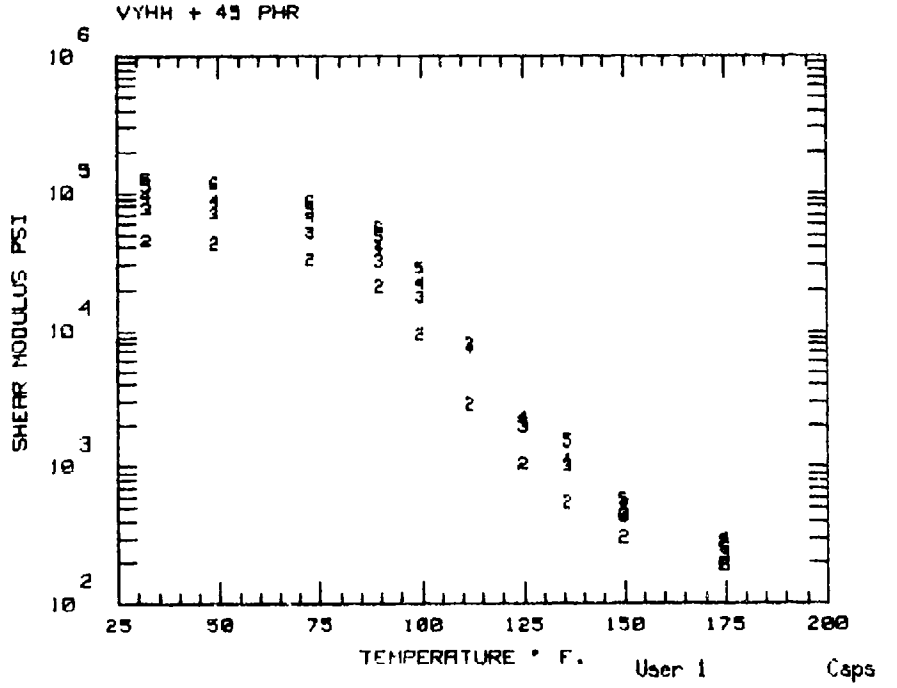
LOG(FR)=LOG(F)-12(T-T0)/(525+T-T0)
A=(LOG(FR)-LOG(FROL))/C

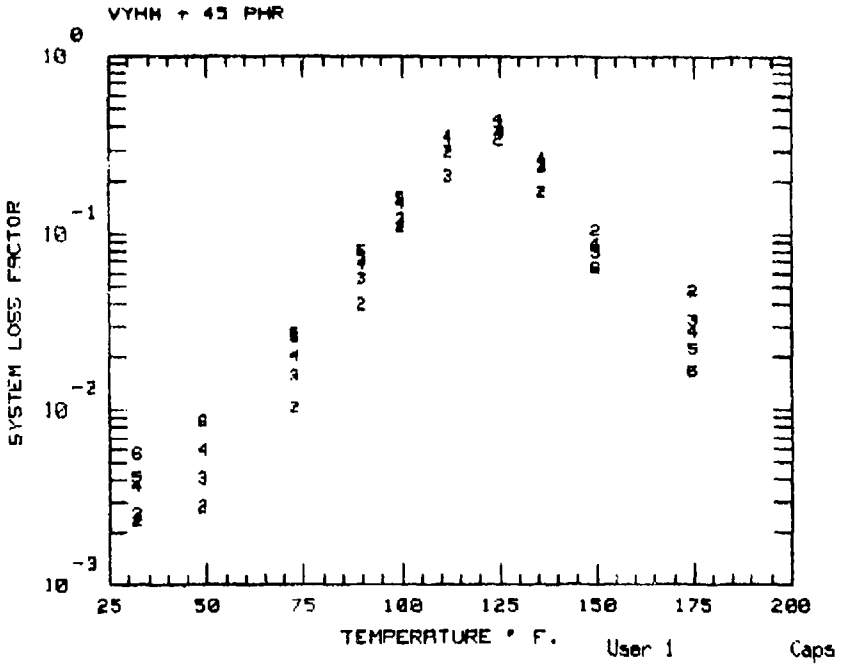
MATERIAL CODE: ED0124
MATERIAL: SD861219-6
MANUFACTURER: UDRI
REMARKS:
DATE: 24 Jun 1987
ENTERED BY: JPD
BEAM MATERIAL: STAINLESS STEEL
BEAM NUMBER: 7-04 & 7-06
BEAM TYPE: SANDWICH BEAM
BEAM LENGTH: 7 in
BEAM THICKNESS: .05925 in
BEAM DENSITY: .283 lb/cu in
DAMPING MATERIAL THICKNESS: .0119 in
DAMPING MATERIAL DENSITY: .04986 lb/cu in

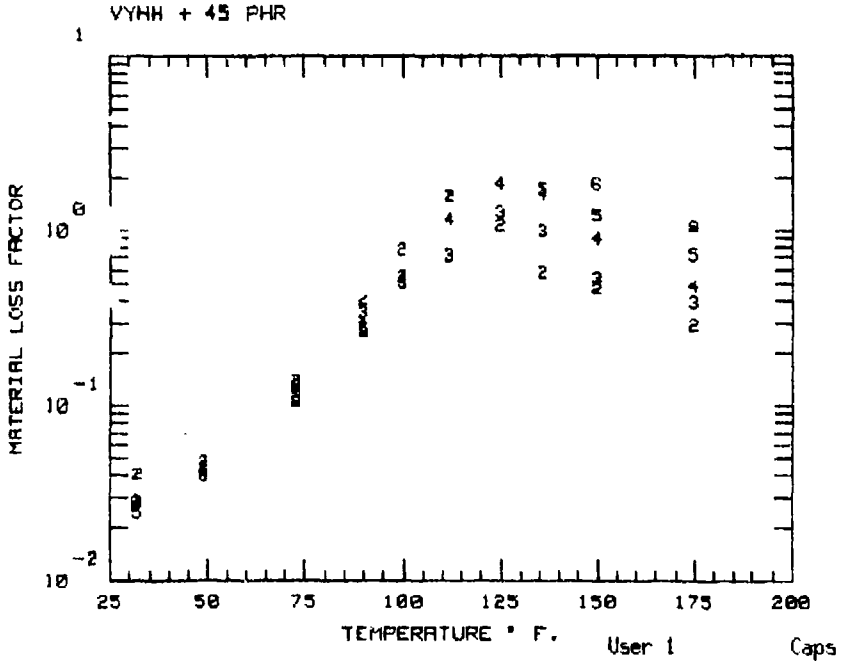
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	SHEAR MODULUS PSI	MATERIAL LOSS FACTOR
1	+75	4	1298.9	2810.0	.005730	1.5901E+05	.055759
2	+75	5	2148.8	4483.0	.007470	1.5077E+05	.046569
3	+100	3	659.6	1477.9	.012610	2.0871E+05	.313944
4	+100	4	1296.2	2758.0	.013670	1.1811E+05	.105245
5	+100	5	2144.2	4392.0	.016190	1.2103E+05	.086712
6	+125	2	236.0	534.7	.010010	1.3971E+05	.521537
7	+125	3	658.7	1442.5	.024120	9.7194E+04	.297361
8	+125	4	1293.6	2682.0	.018570	8.3134E+04	.109695
9	+125	5	2139.6	4276.0	.026590	9.4147E+04	.121330
10	+125	6	3197.5	6090.0	.027910	9.5965E+04	.101573
11	+150	2	235.4	515.7	.039560	3.0981E+04	.496703
12	+150	3	657.7	1384.0	.046460	4.7379E+04	.319961
13	+150	4	1290.9	2523.0	.047290	4.6139E+04	.193012
14	+150	5	2134.9	3954.0	.085580	5.0527E+04	.288345
15	+175	2	234.8	474.2	.188950	6.6142E+03	1.098120
16	+175	3	656.8	1203.0	.215380	1.1606E+04	.780784
17	+175	4	1288.3	2152.0	.272070	1.3766E+04	.840376
18	+200	2	234.2	301.0	.365780	6.5502E+02	1.264258
19	+200	3	655.8	777.0	.393050	1.0411E+03	1.792710
20	+200	4	1285.6	1467.0	.242200	1.7370E+03	1.159187
21	+225	2	233.6	266.0	.105070	3.3206E+02	.475698
22	+225	3	654.9	710.0	.040840	5.6276E+02	.261556
23	+225	4	1283.0	1313.0	.051180	3.5602E+02	.849704
24	+225	5	2121.0	2171.0	.078300	5.8296E+02	1.312915
25	+250	3	653.9	676.0	.031950	2.4387E+02	.406398
26	+250	4	1280.3	1293.0	.020800	2.0450E+02	.575538
27	+275	2	232.4	249.8	.036700	1.7699E+02	.256498
28	+275	3	653.0	667.0	.019190	1.7106E+02	.334728
29	+275	4	1277.7	1284.0	.017600	1.4886E+02	.656609
30	+300	3	652.0	625.0	.035360	0.0000E+00	0.000000
31	+300	4	1275.0	1277.0	.008300	1.1125E+02	.408509
32	+300	5	2107.1	2104.0	.007320	1.2908E+02	.508466

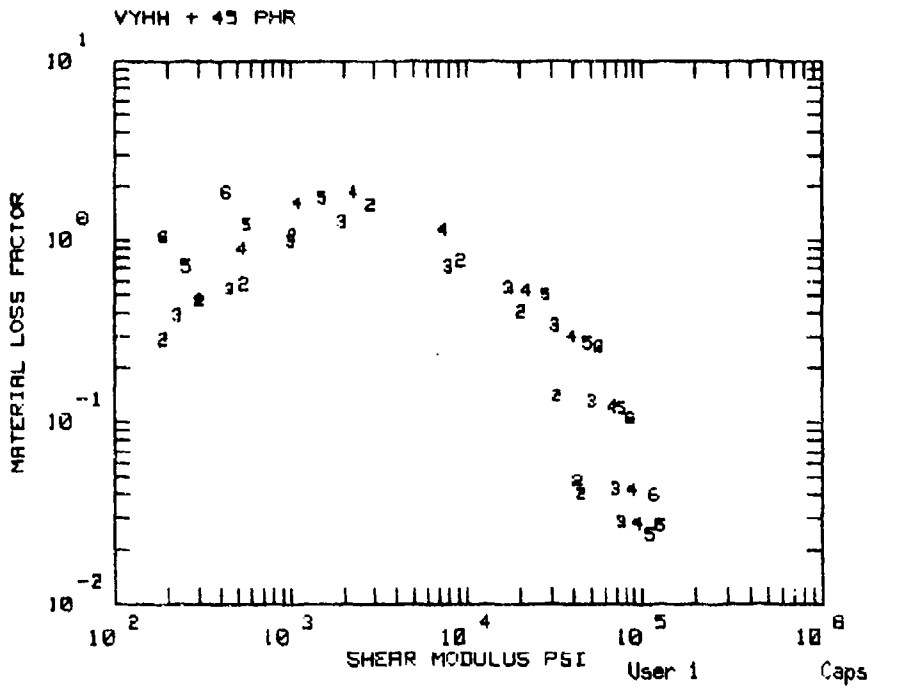

VYHH + 45 PHR
TEMPERATURE DEG F (DELTA=25)
130
80
MODULUS
LOSS FACTOR
SHEAR MODULUS psi
FREQUENCY HERTZ
REDUCED FREQUENCY HERTZ


VYHH + 45 PHR
FREQUENCY Hz
10^4
10^3
10^2
25
50
75
100
125
150
175
200
TEMPERATURE ° F.
User 1
Caps


VYHH + 45 PHR
SHEAR MODULUS PSI
10^6
10^5
10^4
10^3
10^2
25
50
75
100
125
150
175
200
TEMPERATURE ° F.
User 1
Caps


VYHH + 45 PHR
SYSTEM LOSS FACTOR
TEMPERATURE ° F.
User 1
Caps


VYHH + 45 PHR
MATERIAL LOSS FACTOR
TEMPERATURE ° F.
User 1
Caps



MATERIAL CODE: ED0016
MATERIAL: 860821-4

UNITS ARE ENGLISH
LOG(M)=LOG(ML)+(2LOG(MROM/ML))/(1+(FQROM/FR)^SLOPE)

TZERO	FQROM	MROM	SLOPE	ML
248.0	8.500E+06	3.336E+03	0.550	1.305E+02

LOG(ETA)=LOG(ETFROL)+((SH+SL)A+(SL-SH)(1-SQR(1+A^2)))C/2

TZERO	ETFROL	SL	SH	FROL	C
248.0	1.550	.500	-.465	3.500E+06	.500

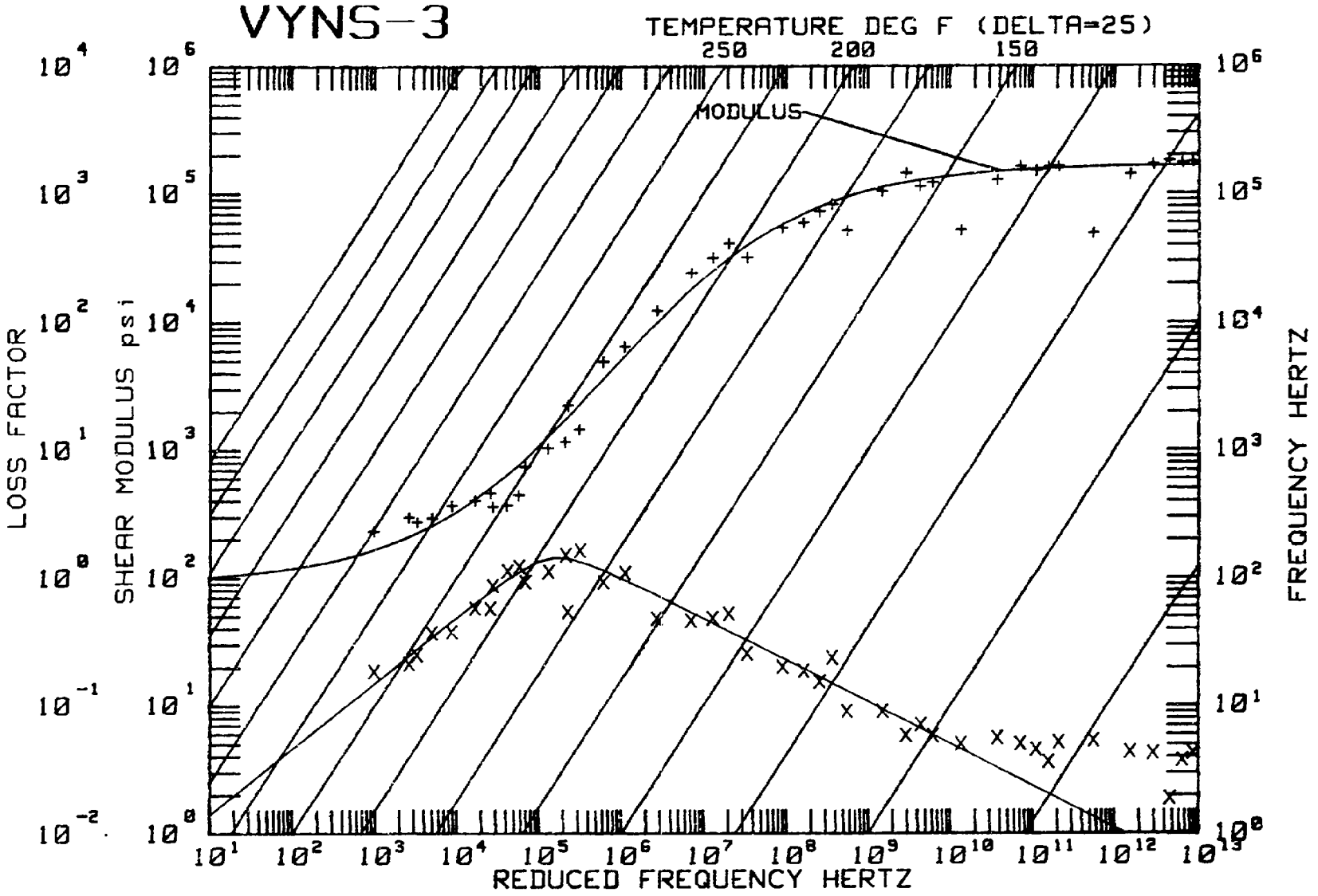
LOG(FR)=LOG(F)-12(T-T0)/(525+T-T0)
A=(LOG(FR)-LOG(FROL))/C

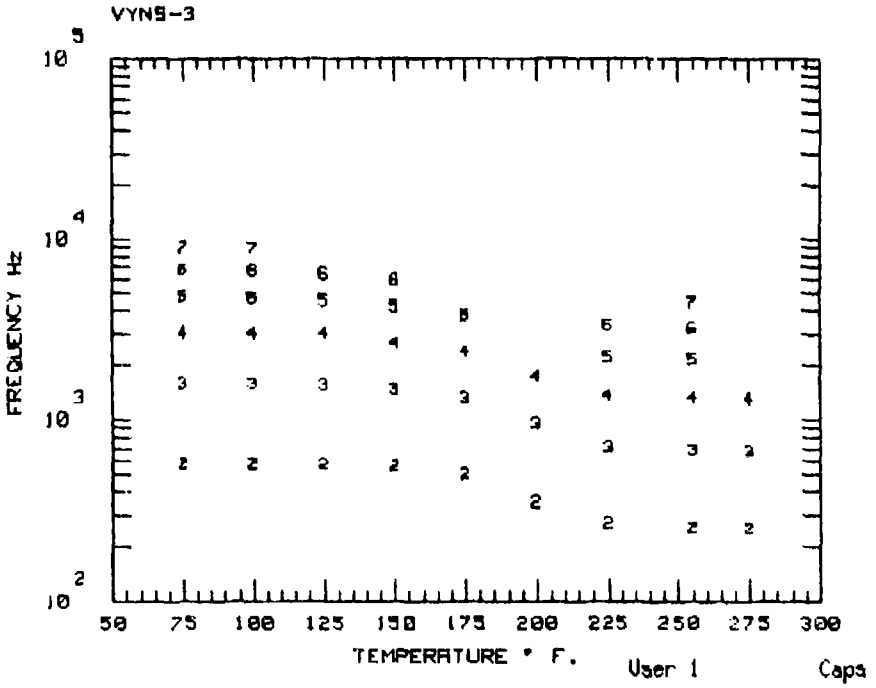
MATERIAL CODE: ED0016
MATERIAL: 860821-4
MANUFACTURER: UD
REMARKS: W/GREEN EPOXY
DATE: 5 Dec 1986
ENTERED BY: SRR
BEAM MATERIAL: STAINLESS STEEL
BEAM NUMBER: SS-7-34 & SS-7-45
BEAM TYPE: SANDWICH BEAM
BEAM LENGTH: 7 in
BEAM THICKNESS: .05945 in
BEAM DENSITY: .283 lb/cu in
DAMPING MATERIAL THICKNESS: .00925 in
DAMPING MATERIAL DENSITY: .046605 lb/cu in

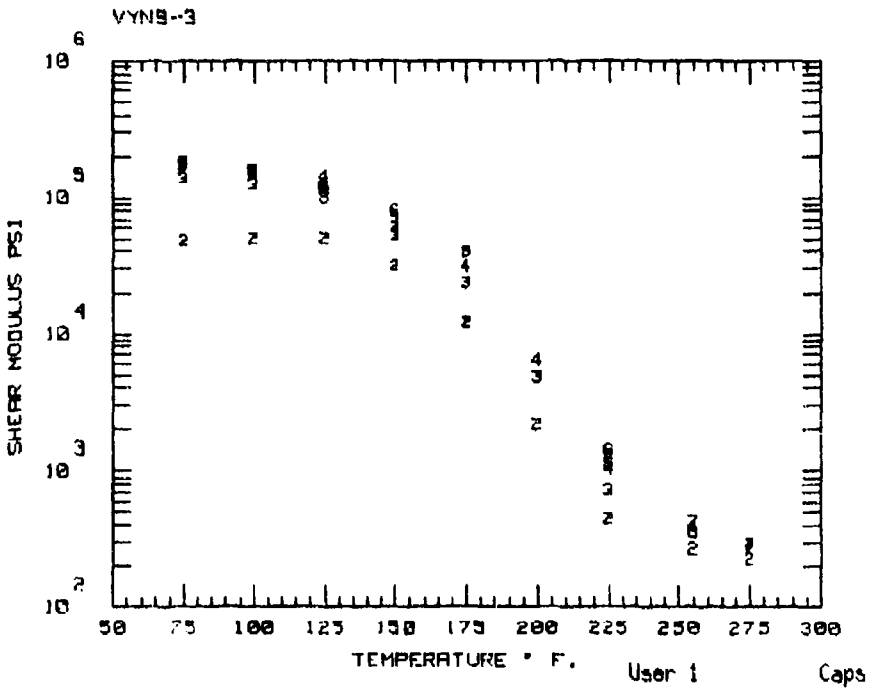
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	SHEAR MODULUS PSI	MATERIAL LOSS FACTOR
1	+73	2	241.2	515.6	.010320	3.2811E+04	.139081
2	+73	3	676.2	1406.0	.015690	5.2063E+04	.130037
3	+73	4	1328.4	2680.0	.020150	6.7506E+04	.120894
4	+73	5	2207.2	4289.0	.025860	7.6380E+04	.119062
5	+73	6	3308.5	6209.0	.027070	8.6148E+04	.104979
6	+49	2	241.9	521.3	.002820	4.3104E+04	.047592
7	+49	3	678.0	1431.9	.004070	7.0840E+04	.042830
8	+49	4	1332.6	2740.3	.005890	8.8154E+04	.042581
9	+49	6	3320.5	6455.0	.008660	1.1739E+05	.039860
10	+32	2	242.3	522.8	.002330	4.4857E+04	.040617
11	+32	3	679.3	1439.0	.002540	7.6070E+04	.029293
12	+32	4	1335.5	2759.5	.003660	9.5124E+04	.027966
13	+32	5	2219.7	4466.0	.004160	1.1162E+05	.024329
14	+32	6	3328.9	6520.0	.005640	1.2666E+05	.027147
15	+90	2	240.8	507.2	.039650	2.0802E+04	.405578
16	+90	3	675.0	1363.0	.055470	3.2069E+04	.341225
17	+90	4	1325.4	2550.0	.067060	3.9703E+04	.296823
18	+90	5	2202.0	4068.0	.074020	4.8727E+04	.274000
19	+90	6	3300.0	5860.0	.080380	5.6459E+04	.263016
20	+100	2	240.5	489.0	.110630	9.3983E+03	.773188
21	+100	3	674.2	1294.0	.121040	1.7473E+04	.551729
22	+100	4	1323.7	2381.0	.150480	2.1923E+04	.534764
23	+100	5	2198.9	3780.0	.159370	2.8321E+04	.504887
24	+112	2	240.2	450.1	.291490	2.8726E+03	1.576871
25	+112	3	673.3	1161.0	.213610	7.9689E+03	.716100
26	+112	4	1321.6	2029.0	.351200	7.4118E+03	1.146256
27	+125	2	239.9	346.0	.341000	1.0439E+03	1.068773
28	+125	3	672.3	903.0	.374300	1.9827E+03	1.267476
29	+125	4	1319.3	1640.0	.433800	2.2982E+03	1.833615
30	+136	2	239.6	299.0	.173200	5.5530E+02	.574579
31	+136	3	671.5	793.0	.239600	1.0156E+03	.991415
32	+136	4	1317.4	1465.0	.267600	1.1177E+03	1.607651

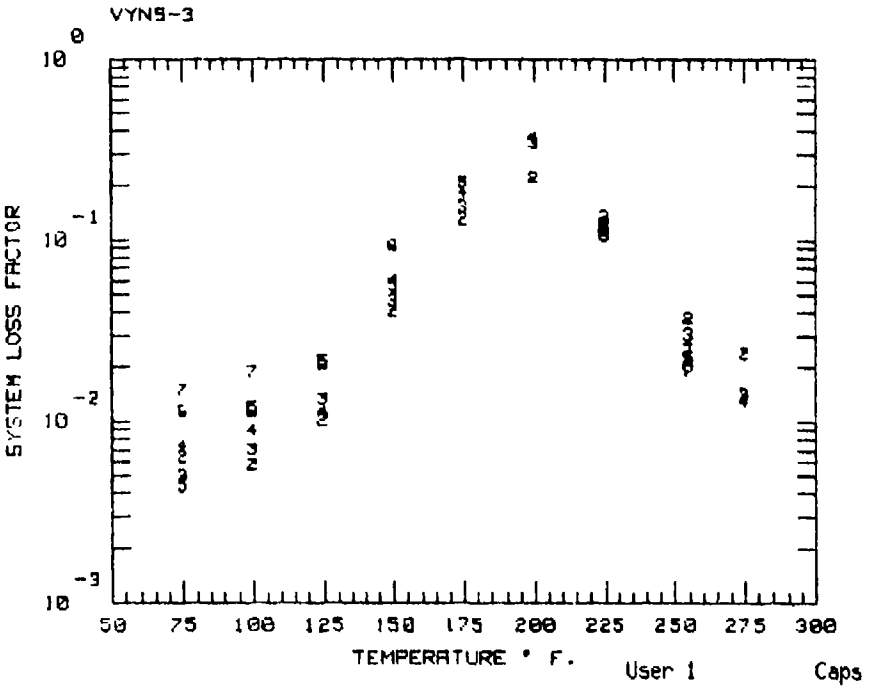
MATERIAL CODE: ED0016
MATERIAL: 860821-4
MANUFACTURER: UD
REMARKS: W/GREEN EPOXY
DATE: 5 Dec 1986
ENTERED BY: SRR
BEAM MATERIAL: STAINLESS STEEL
BEAM NUMBER: SS-7-34 & SS-7-45
BEAM TYPE: SANDWICH BEAM
BEAM LENGTH: 7 in
BEAM THICKNESS: .05945 in
BEAM DENSITY: .283 lb/cu in
DAMPING MATERIAL THICKNESS: .00925 in
DAMPING MATERIAL DENSITY: .046605 lb/cu in

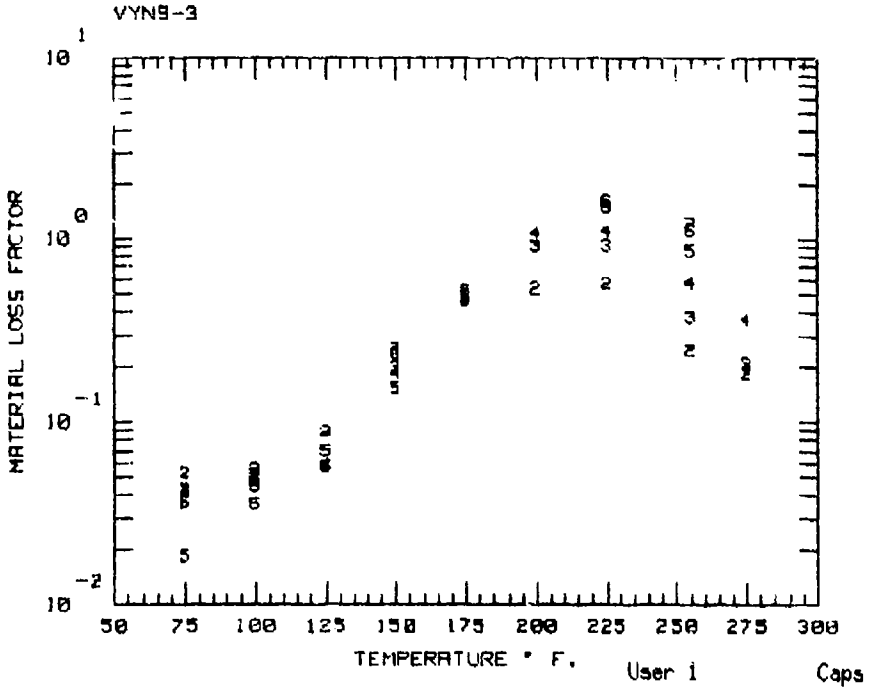
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	SHEAR MODULUS PSI	MATERIAL LOSS FACTOR
33	+136	5	2187.9	2390.0	.248300	1.5338E+03	1.712819
34	+150	2	239.2	274.5	.104900	3.0677E+02	.465030
35	+150	3	670.5	725.0	.078900	4.5894E+02	.538338
36	+150	4	1315.0	1379.0	.087310	5.4148E+02	.898736
37	+150	5	2183.7	2248.0	.079630	5.7414E+02	1.217507
38	+150	6	3270.1	3310.0	.064050	4.3785E+02	1.834083
39	+175	2	238.6	261.0	.047510	1.9037E+02	.287871
40	+175	3	668.6	694.9	.032380	2.2971E+02	.387215
41	+175	4	1310.7	1343.0	.028070	3.0149E+02	.479965
42	+175	5	2176.0	2197.0	.022350	2.5484E+02	.720574
43	+175	6	3257.6	3263.0	.016580	1.9025E+02	1.050700

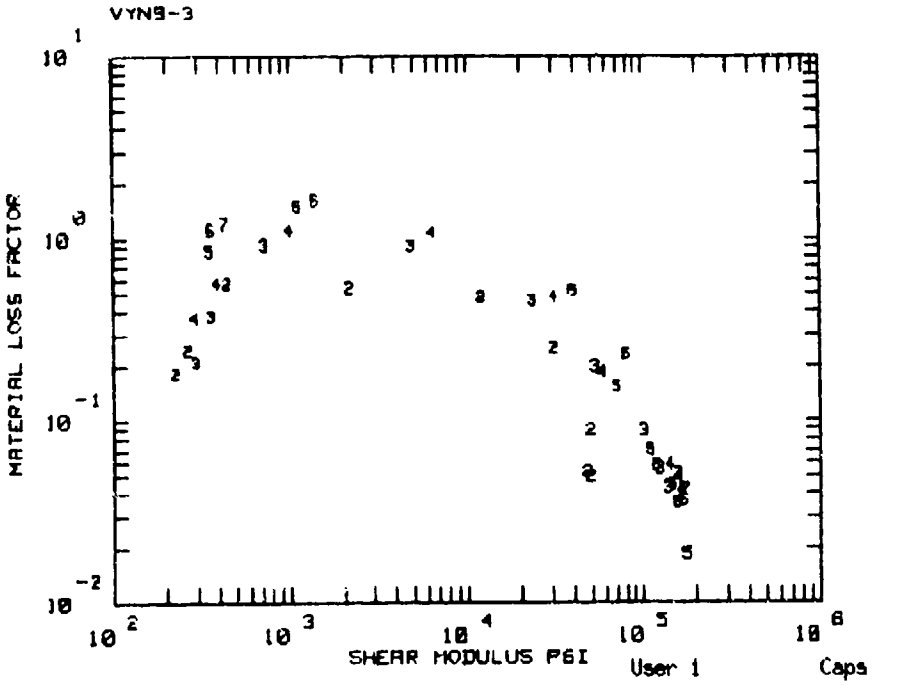

VYNS-3
TEMPERATURE DEG F (DELTA=25)
250
200
150
MODULUS
LOSS FACTOR
SHEAR MODULUS psi
FREQUENCY HERTZ
REDUCED FREQUENCY HERTZ


VYNS-3
FREQUENCY Hz
10^5
10^4
10^3
10^2
50 75 100 125 150 175 200 225 250 275 300
TEMPERATURE ° F.
User 1
Caps


VYNS--3
SHEAR MODULUS PSI
10^6
10^5
10^4
10^3
10^2
50 75 100 125 150 175 200 225 250 275 300
TEMPERATURE ° F.
User 1
Caps


VYNS-3
SYSTEM LOSS FACTOR
10^0
10^-1
10^-2
10^-3
50 75 100 125 150 175 200 225 250 275 300
TEMPERATURE ° F.
User 1
Caps


VYNS-3
MATERIAL LOSS FACTOR
10^1
10^0
10^-1
10^-2
50 75 100 125 150 175 200 225 250 275 300
TEMPERATURE ° F.
User 1
Caps



MATERIAL CODE: ED0095
MATERIAL: SD861219-5

UNITS ARE ENGLISH
LOG(M)=LOG(ML)+(2LOG(MROM/ML))/(1+(FQROM/FR)^SLOPE)

TZERO	FQROM	MROM	SLOPE	ML
300.0	7.000E+05	3.900E+03	0.370	9.000E+01

LOG(ETA)=LOG(ETFROL)+((SH+SL)A+(SL-SH)(1-SQR(1+A^2)))C/2

TZERO	ETFROL	SL	SH	FROL	C
300.0	1.440	.520	-.330	1.400E+05	.350

LOG(FR)=LOG(F)-12(T-T0)/(525+T-T0)
A=(LOG(FR)-LOG(FROL))/C

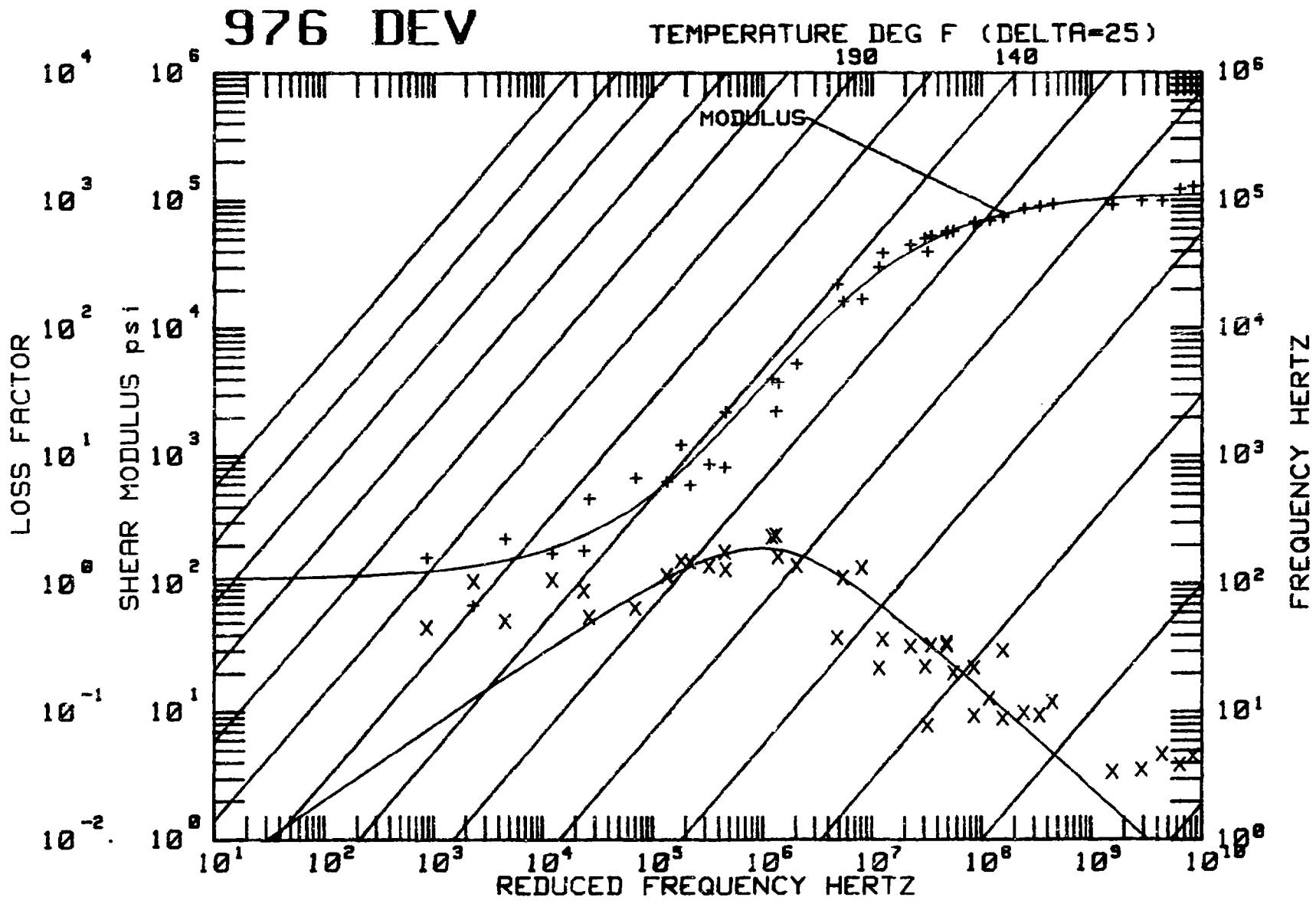
MATERIAL CODE: ED0095
MATERIAL: SD861219-5
MANUFACTURER: UD
REMARKS: 2nd TEST
DATE: 5 May 1987
ENTERED BY: TV6
BEAM MATERIAL: STAINLESS STEEL
BEAM NUMBER: 7-103 & 7-104
BEAM TYPE: SANDWICH BEAM
BEAM LENGTH: 7 in
BEAM THICKNESS: .05986 in
BEAM DENSITY: .283 lb/cu in
DAMPING MATERIAL THICKNESS: .02178 in
DAMPING MATERIAL DENSITY: .05022 lb/cu in

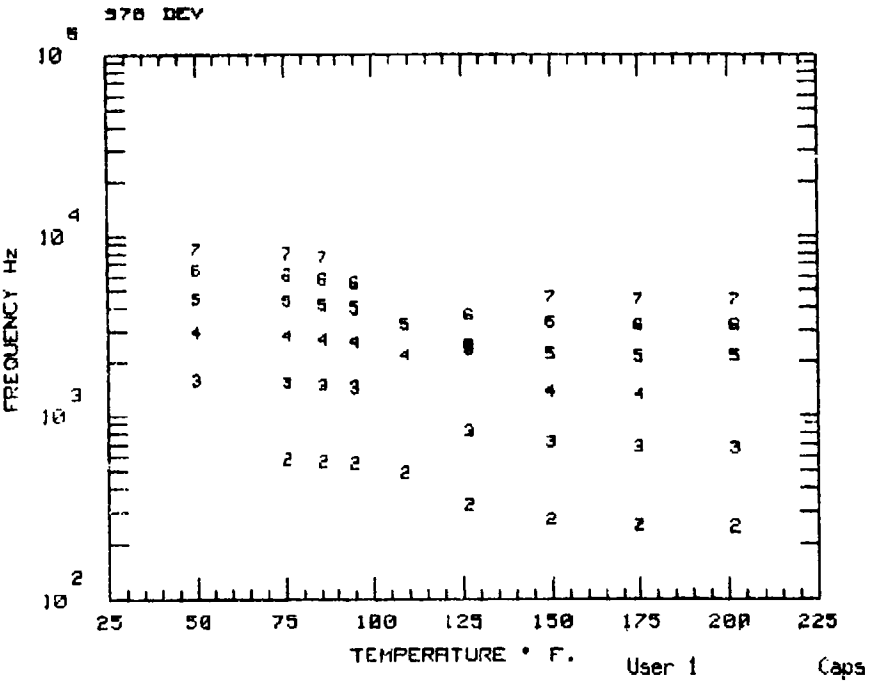
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	SHEAR MODULUS PSI	MATERIAL LOSS FACTOR
1	+75	2	241.4	570.5	.006350	4.7758E+04	.052612
2	+75	3	673.7	1595.9	.005010	1.3842E+05	.042924
3	+75	4	1325.9	3028.4	.007300	1.6500E+05	.041877
4	+75	5	2197.6	4797.2	.004390	1.7646E+05	.018511
5	+75	6	3292.0	6760.0	.011360	1.6935E+05	.036960
6	+75	7	4598.6	8965.0	.014980	1.7260E+05	.042243
7	+100	2	240.8	570.8	.005710	5.0197E+04	.049522
8	+100	3	672.0	1582.1	.006990	1.2421E+05	.055033
9	+100	4	1322.2	3010.0	.008880	1.5797E+05	.049553
10	+100	5	2191.4	4678.0	.011860	1.4668E+05	.044818
11	+100	6	3282.7	6667.0	.011370	1.5694E+05	.035716
12	+100	7	4586.2	8812.0	.018670	1.5832E+05	.051038
13	+125	2	240.1	569.5	.010170	5.0049E+04	.088787
14	+125	3	670.4	1556.9	.013220	1.0106E+05	.088887
15	+125	4	1318.5	2972.0	.011160	1.4116E+05	.057657
16	+125	5	2185.2	4481.0	.021530	1.1003E+05	.069785
17	+125	6	3273.5	6346.0	.020580	1.1851E+05	.057337
18	+150	2	239.5	551.6	.040370	3.1145E+04	.252457
19	+150	3	668.8	1464.2	.046030	5.2838E+04	.198871
20	+150	4	1314.8	2649.0	.059570	5.7978E+04	.184187
21	+150	5	2179.0	4156.0	.056110	7.0930E+04	.151921
22	+150	6	3264.2	5910.0	.093060	8.0707E+04	.233657
23	+175	2	238.8	499.8	.130050	1.2070E+04	.475325
24	+175	3	667.1	1314.2	.150890	2.3551E+04	.457521
25	+175	4	1311.1	2388.0	.181110	3.0925E+04	.476280
26	+175	5	2172.9	3755.0	.206260	3.9825E+04	.515726
27	+200	2	238.2	352.6	.220650	2.1951E+03	.535509
28	+200	3	665.5	953.0	.344810	4.8382E+03	.914821
29	+200	4	1307.4	1723.0	.363840	6.3194E+03	1.080090
30	+225	2	237.5	266.9	.122890	4.4840E+02	.567045
31	+225	3	663.8	710.4	.133590	7.2697E+02	.919253
32	+225	4	1303.7	1364.0	.121187	1.0096E+03	1.108343

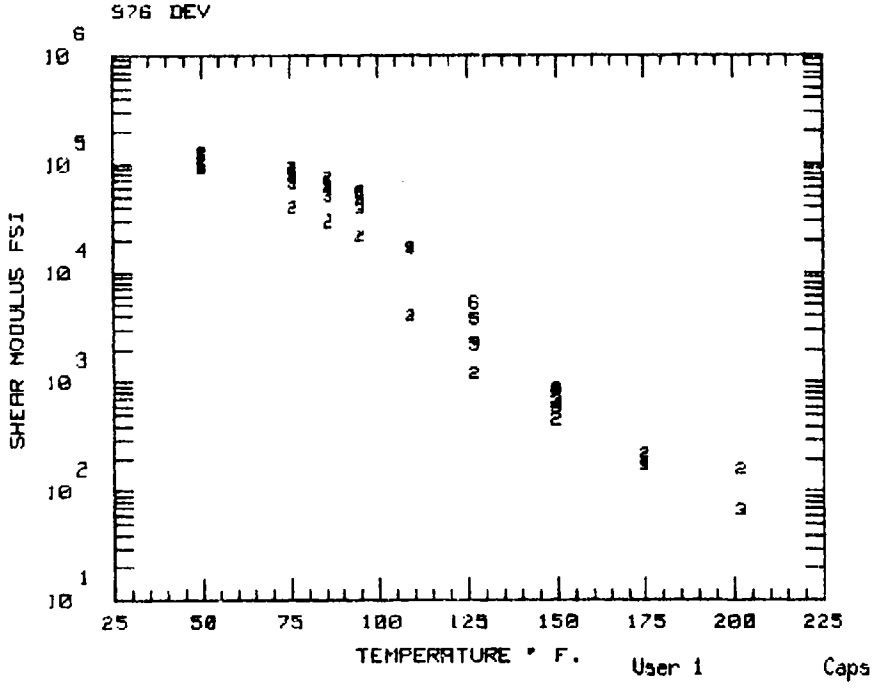
MATERIAL CODE: ED0095
MATERIAL: SD861219-5
MANUFACTURER: UD
REMARKS: 2nd TEST
DATE: 5 May 1987
ENTERED BY: TVG
BEAM MATERIAL: STAINLESS STEEL
BEAM NUMBER: 7-103 & 7-104
BEAM TYPE: SANDWICH BEAM
BEAM LENGTH: 7 in
BEAM THICKNESS: .05986 in
BEAM DENSITY: .283 lb/cu in
DAMPING MATERIAL THICKNESS: .02178 in
DAMPING MATERIAL DENSITY: .05022 lb/cu in

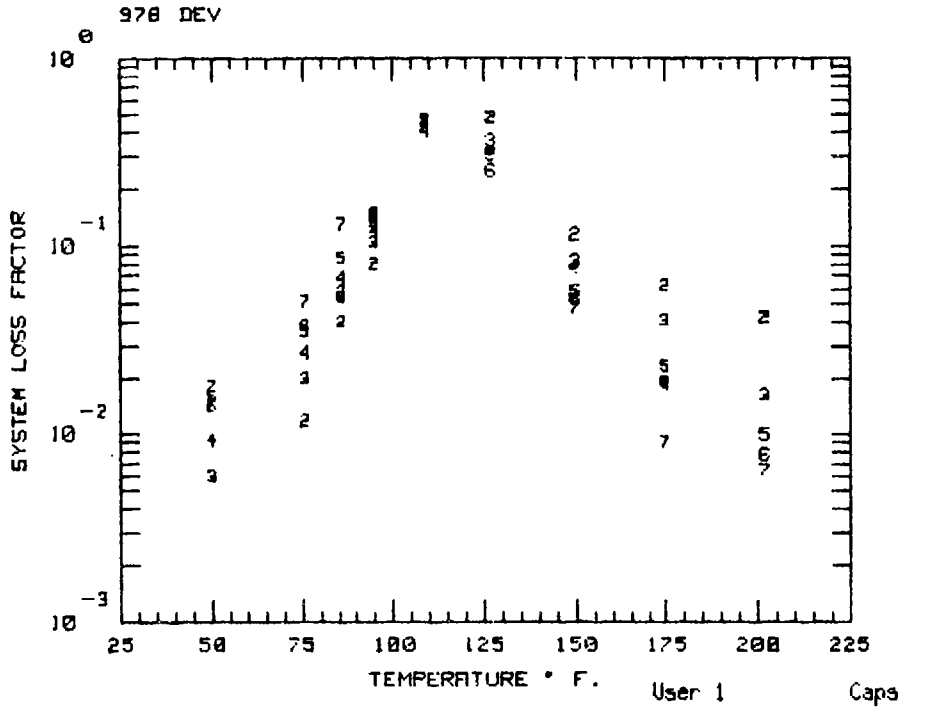
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	SHEAR MODULUS PSI	MATERIAL LOSS FACTOR
33	+225	5	2160.5	2219.0	.116180	1.1323E+03	1.494321
34	+225	6	3236.4	3301.0	.106630	1.4125E+03	1.623048
35	+255	2	236.7	253.5	.037040	2.6766E+02	.247160
36	+255	3	661.8	680.1	.030290	3.5954E+02	.373687
37	+255	4	1299.3	1310.5	.027010	3.9099E+02	.572279
38	+255	5	2153.1	2148.0	.022670	3.5342E+02	.856547
39	+255	6	3225.3	3204.0	.020350	3.6147E+02	1.118263
40	+255	7	4509.6	4474.0	.018980	4.3354E+02	1.210566
41	+275	2	236.2	250.0	.024080	2.2588E+02	.183320
42	+275	3	660.5	673.6	.014220	2.9218E+02	.210514
43	+275	4	1296.3	1299.4	.013000	2.8822E+02	.365630

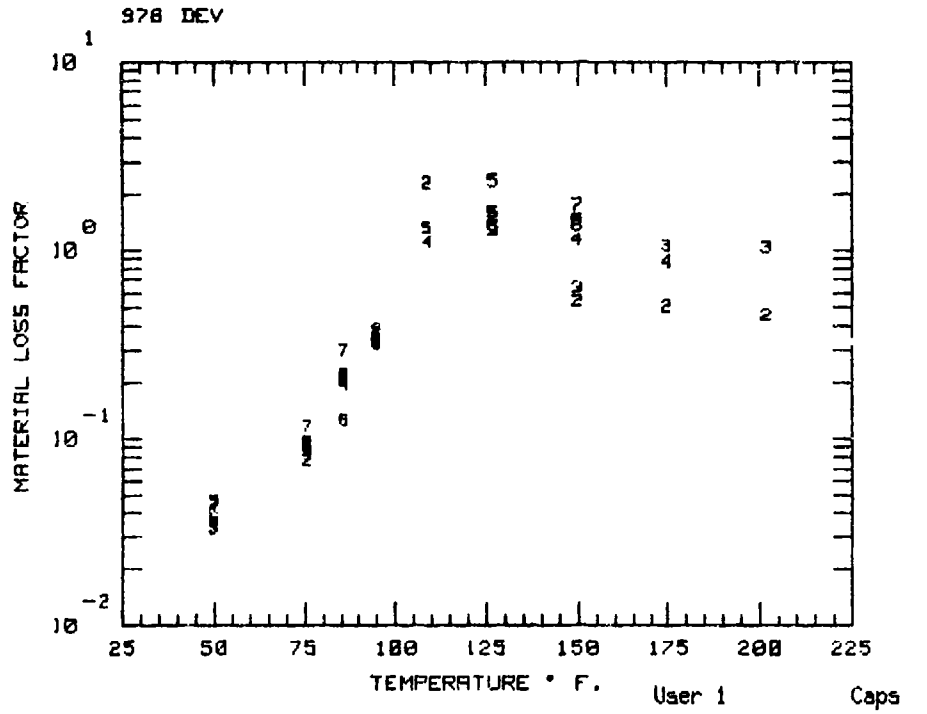
APPENDIX B
PRELIMINARY TESTS (DAMPING POLYMERS)

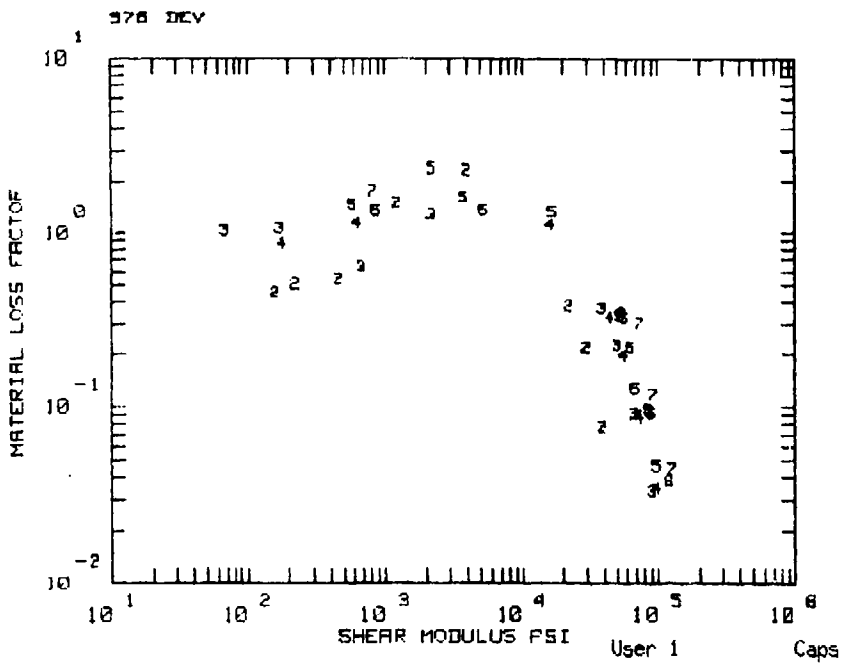

976 DEV
TEMPERATURE DEG F (DELTA=25)
190
140
MODULUS
LOSS FACTOR
SHEAR MODULUS psi
FREQUENCY HERTZ
REDUCED FREQUENCY HERTZ


976 DEV
FREQUENCY Hz
TEMPERATURE ° F.
User 1
Caps


976 DEV
SHEAR MODULUS PSI
TEMPERATURE ° F.
User 1
Caps


978 DEV
SYSTEM LOSS FACTOR
10^0
10^-1
10^-2
10^-3
25
50
75
100
125
150
175
200
225
TEMPERATURE ° F.
User 1
Caps


978 DEV
MATERIAL LOSS FACTOR
10^1
10^0
10^-1
10^-2
25
50
75
100
125
150
175
200
225
TEMPERATURE ° F.
User 1
Caps



MATERIAL CODE: A576D
MATERIAL: 976 DEV

UNITS ARE ENGLISH
LOG(M)=LOG(ML)+(2LOG(MROM/ML))/(1+(FQROM/FR)^SLOPE)

TZERO	FQROM	IROM	SLOPE	ML
225.0	1.000E+06	3.600E+03	0.550	1.100E+02

LOG(ETA)=LOG(ETFROL)+((SH+SL)A+(SL-SH)(1-SQR(1+A^2)))C/2

TZERO	ETFROL	SL	SH	FROL	C
225.0	1.900	.600	-.800	1.200E+06	.750

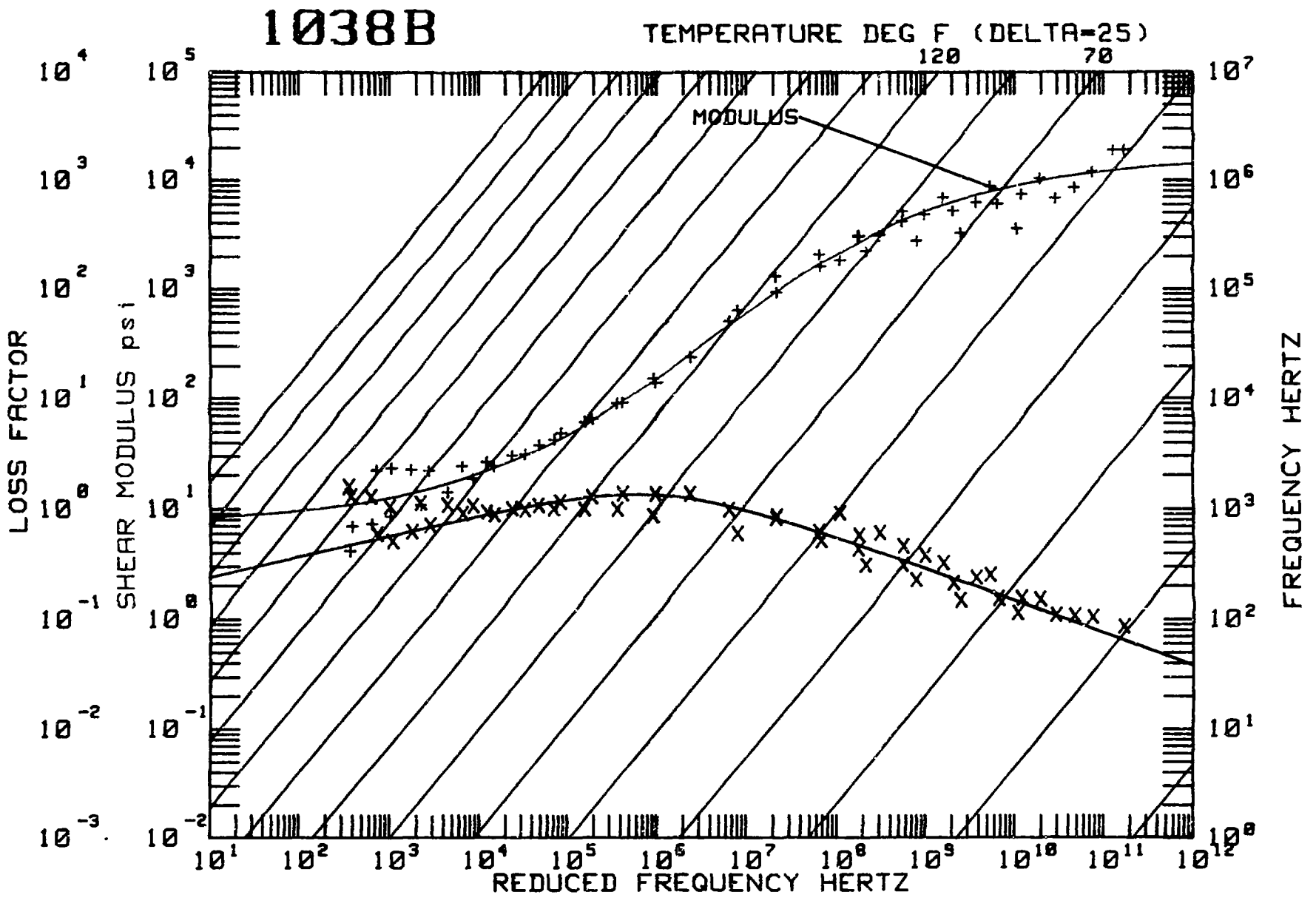
LOG(FR)=LOG(F)-12(T-T0)/(525+T-T0)
A=(LOG(FR)-LOG(FROL))/C

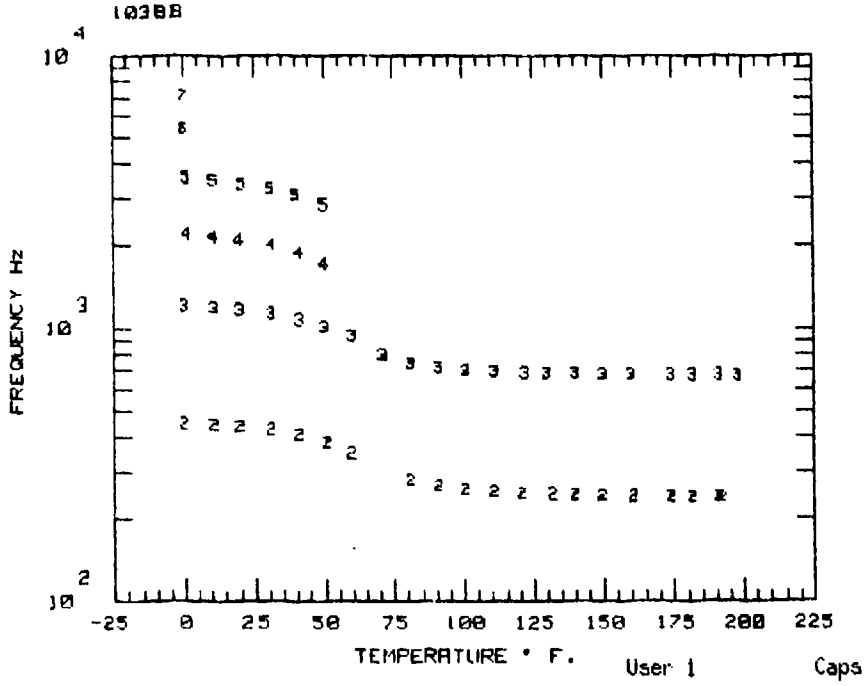
MATERIAL CODE: A976D
MATERIAL: 976 DEV
MANUFACTURER: AIR PRDOUCTS AND CHEMICALS
REMARKS:
DATE: 25 Nov 1986
ENTERED BY: SRR
BEAM MATERIAL: STAINLESS STEEL
BEAM NUMBER: SS-7-33 & SS-7-42
BEAM TYPE: SANDWICH BEAM
BEAM LENGTH: 7 in
BEAM THICKNESS: .059645 in
BEAM DENSITY: .283 lb/cu in
DAMPING MATERIAL THICKNESS: .02358 in
DAMPING MATERIAL DENSITY: .0403 lb/cu in

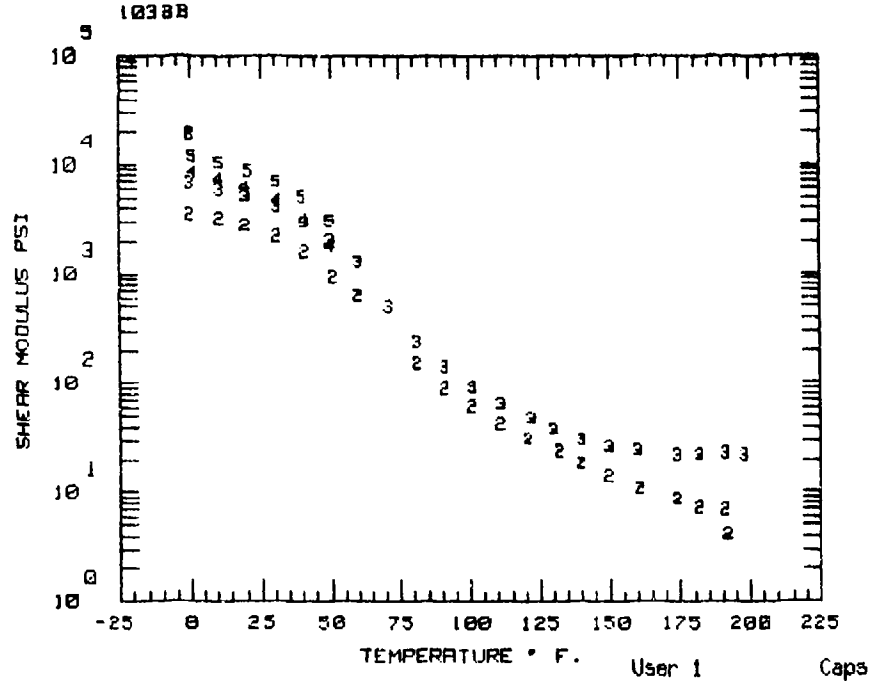
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	SHEAR MODULUS PSI	MATERIAL LOSS FACTOR
1	+202	2	239.4	248.2	.042300	1.5991E+02	.454120
2	+202	3	669.3	665.4	.016380	6.7517E+01	1.036693
3	+202	5	2182.6	2149.3	.009960	0.0000E+00	0.000000
4	+202	6	3262.0	3208.0	.007730	0.0000E+00	0.000000
5	+202	7	4546.5	4472.6	.006420	0.0000E+00	0.000000
6	+175	2	240.2	253.5	.062330	2.2319E+02	.507151
7	+175	3	671.4	675.6	.041150	1.7208E+02	1.062388
8	+175	5	2189.5	2146.0	.023490	0.0000E+00	0.000000
9	+175	6	3272.2	3194.0	.019290	0.0000E+00	0.000000
10	+175	7	4561.0	4456.0	.009180	0.0000E+00	0.000000
11	+175	4	1321.4	1317.3	.018520	1.8086E+02	.876833
12	+150	2	240.9	270.0	.115180	4.5831E+02	.545007
13	+150	3	673.4	714.0	.083330	6.7047E+02	.641755
14	+150	5	2196.0	2211.0	.057890	5.8274E+02	1.459797
15	+150	6	3281.7	3303.0	.053160	8.5993E+02	1.359369
16	+150	7	4574.4	4575.0	.047430	8.1295E+02	1.751015
17	+150	4	1325.3	1355.0	.077200	6.2266E+02	1.143797
18	+127	2	241.6	324.5	.478890	1.2064E+03	1.493972
19	+127	3	675.2	823.4	.358480	2.1874E+03	1.275821
20	+127	5	2201.9	2355.0	.298740	2.2143E+03	2.347901
21	+127	5	2201.9	2457.0	.302340	3.6985E+03	1.605457
22	+127	6	3290.4	3637.0	.246930	5.2130E+03	1.357749
23	+109	2	242.2	486.0	.460900	3.9615E+03	2.305056
24	+109	4	1331.8	2173.0	.405890	1.6096E+04	1.100885
25	+109	5	2206.6	3240.0	.462960	1.6705E+04	1.310744
26	+95	2	242.6	548.4	.080600	2.1901E+04	.376653
27	+95	3	677.7	1440.0	.104650	3.8374E+04	.364982
28	+95	4	1334.0	2575.4	.119200	4.4447E+04	.320982
29	+95	5	2210.2	3977.0	.134520	5.2342E+04	.327832
30	+95	6	3302.5	5496.0	.148110	5.4974E+04	.342135
31	+95	6	3302.5	5525.0	.141210	5.6442E+04	.326181
32	+86	2	242.8	562.5	.040000	2.9634E+04	.217258

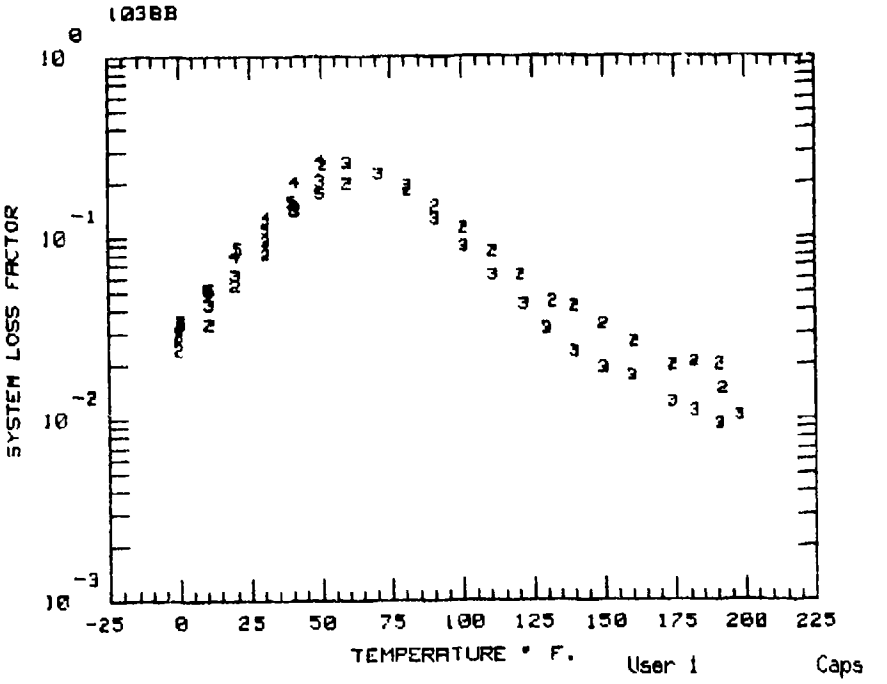
MATERIAL CODE: A976D
MATERIAL: 976 DEV
MANUFACTURER: AIR PRDOUCTS AND CHEMICALS
REMARKS:
DATE: 25 Nov 1986
ENTERED BY: SRR
BEAM MATERIAL: STAINLESS STEEL
BEAM NUMBER: SS-7-33 & SS-7-42
BEAM TYPE: SANDWICH BEAM
BEAM LENGTH: 7 in
BEAM THICKNESS: .059645 in
BEAM DENSITY: .283 lb/cu in
DAMPING MATERIAL THICKNESS: .02358 in
DAMPING MATERIAL DENSITY: .0403 lb/cu in

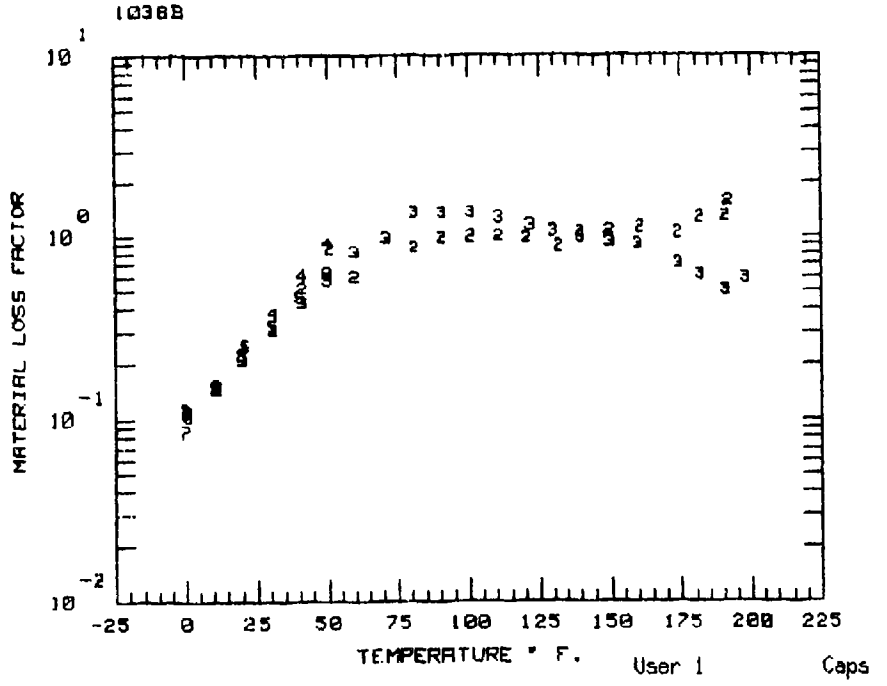
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	SHEAR MODULUS PSI	MATERIAL LOSS FACTOR
33	+86	3	678.4	1486.0	.057400	5.0061E+04	.222724
34	+86	4	1335.4	2681.0	.068630	5.6673E+04	.197817
35	+86	5	2212.5	4130.0	.086440	6.3986E+04	.217430
36	+86	6	3305.9	5739.0	.054450	6.8789E+04	.125934
37	+86	7	4608.8	7595.0	.130090	7.3878E+04	.297808
38	+76	2	243.1	575.1	.011820	3.9219E+04	.076846
39	+76	3	679.2	1534.9	.020070	6.6812E+04	.091184
40	+76	4	1336.9	2791.9	.027470	7.3168E+04	.087769
41	+76	5	2215.1	4355.5	.035360	8.5341E+04	.096519
42	+76	6	3309.7	6055.0	.038150	8.8476E+04	.092584
43	+76	7	4614.2	7940.0	.051010	9.2056E+04	.117231
44	+50	3	681.3	1585.3	.005980	9.0657E+04	.033430
45	+50	4	1341.0	2917.0	.009320	9.7789E+04	.034686
46	+50	5	2221.8	4469.0	.016040	9.7817E+04	.046028
47	+50	6	3319.6	6448.0	.014380	1.2085E+05	.038223
48	+50	7	4628.1	8499.0	.018360	1.2627E+05	.044692

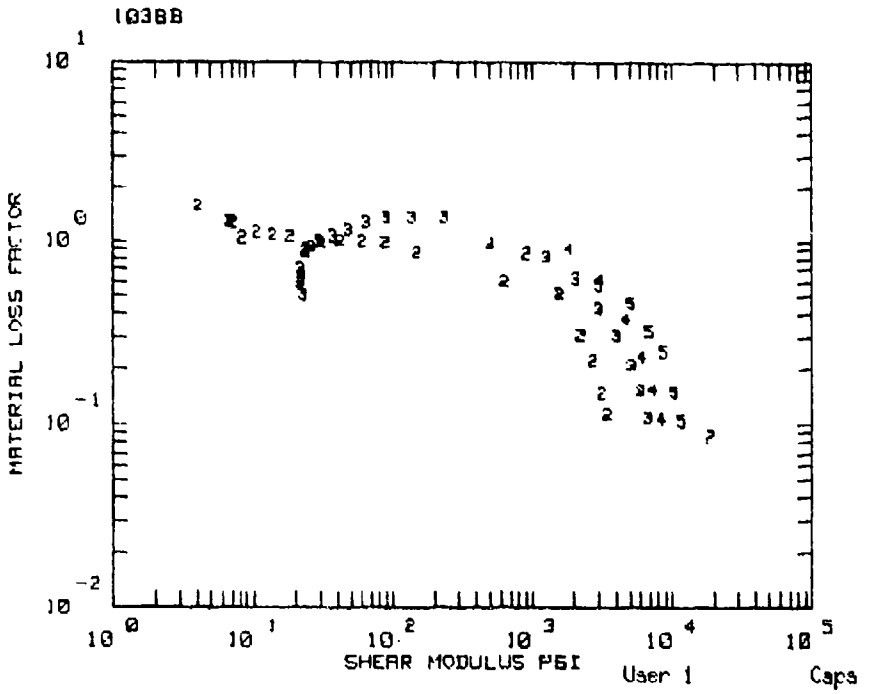

1038B
TEMPERATURE DEG F (DELTA=25)
120
70
MODULUS
LOSS FACTOR
SHEAR MODULUS psi
FREQUENCY HERTZ
REDUCED FREQUENCY HERTZ


1038B
FREQUENCY Hz
TEMPERATURE ° F.
User 1
Caps


1038B
SHEAR MODULUS PSI
TEMPERATURE ° F.
User 1
Caps


1038B
SYSTEM LOSS FACTOR
10^0
10^-1
10^-2
10^-3
-25 0 25 50 75 100 125 150 175 200 225
TEMPERATURE ° F.
User 1
Caps


1038B
MATERIAL LOSS FACTOR
10^1
10^0
10^-1
10^-2
-25 0 25 50 75 100 125 150 175 200 225
TEMPERATURE ° F.
User 1
Caps



MATERIAL CODE: ED0358
MATERIAL: 1038B

UNITS ARE ENGLISH
LOG(M)=LOG(ML)+(2LOG(MROM/ML))/(1+(FQROM/FR)^SLOPE)

TZERO	FQROM	MROM	SLOPE	ML
200.0	3.912E+06	3.511E+02	0.312	7.423E+00

LOG(ETA)=LOG(ETFROL)+((SH+SL)A+(SL-SH)(1-SQR(1+A^2)))C/2

TZERO	ETFROL	SL	SH	FROL	C
200.0	1.356	.200	-.300	9.819E+05	1.100

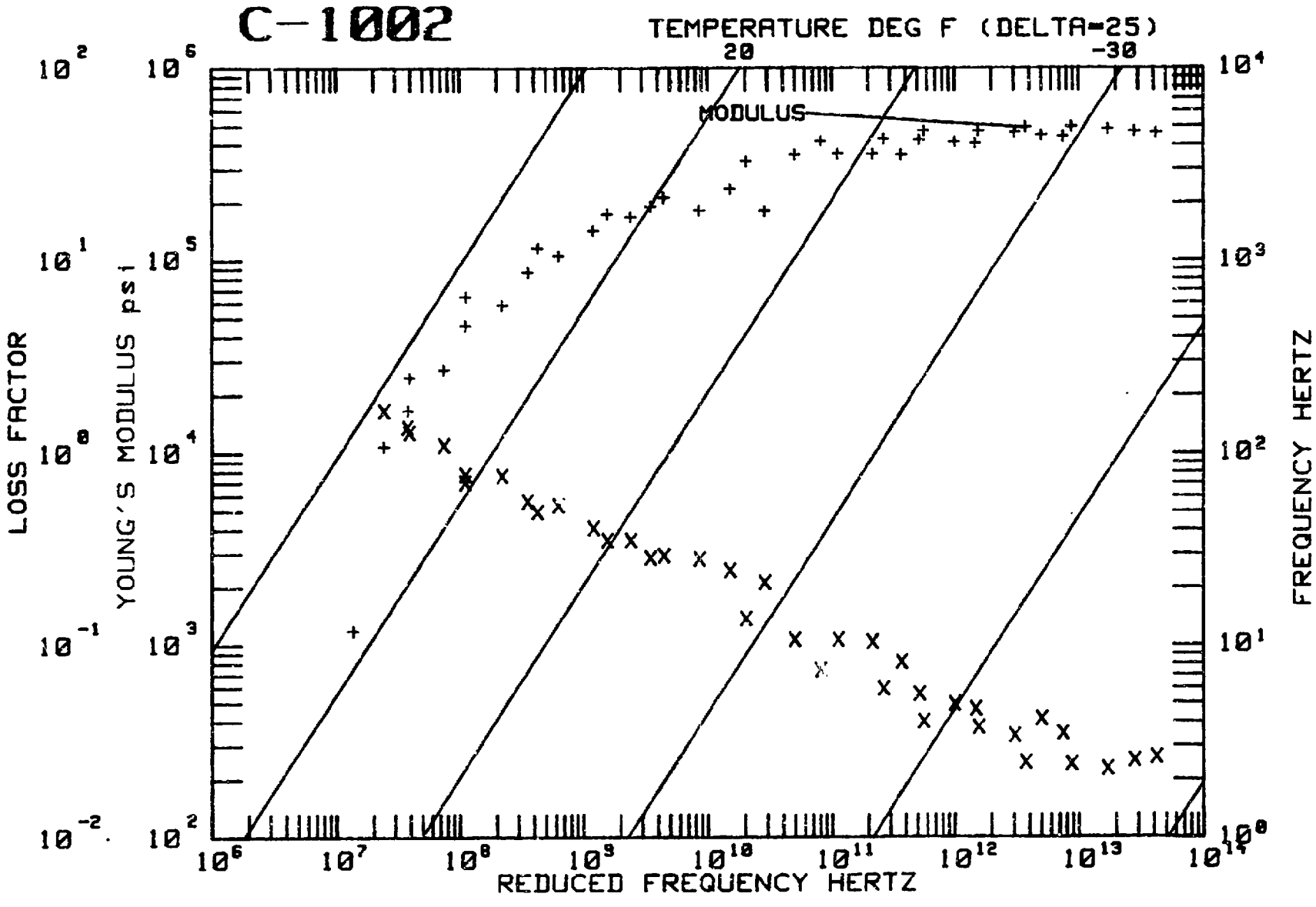
LOG(FR)=LOG(F)-12(T-T0)/(525+T-T0)
A=(LOG(FR)-LOG(FROL))/C

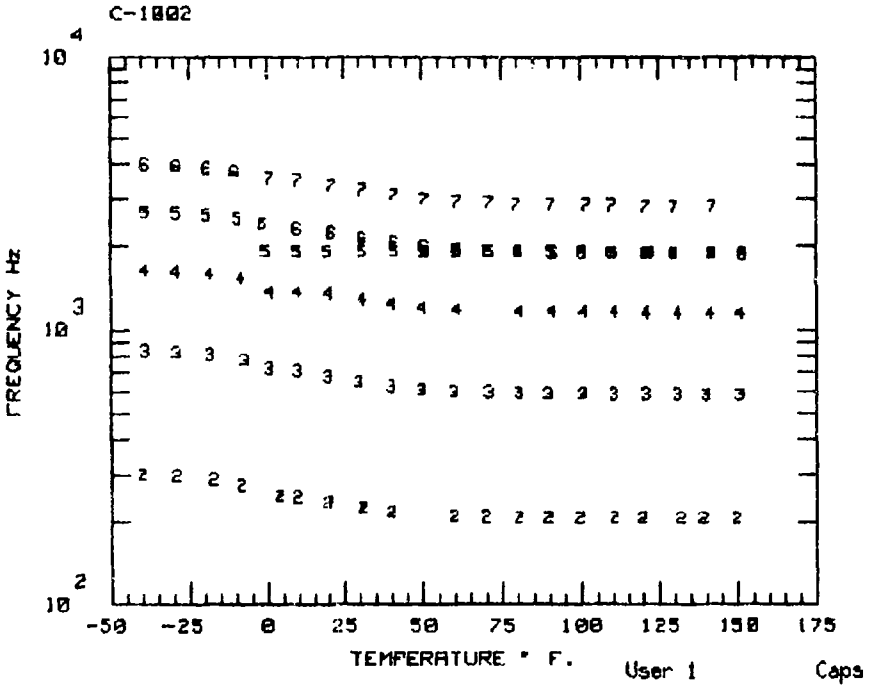
MATERIAL CODE: ED0358
MATERIAL: 1038B
MANUFACTURER: BETHAM
REMARKS: TEST 2 93667-22
DATE: 29 Dec 1987
ENTERED BY: TCM
BEAM MATERIAL: STAINLESS STEEL
BEAM NUMBER: 7-163 & 7-184
BEAM TYPE: SANDWICH BEAM
BEAM LENGTH: 7 in
BEAM THICKNESS: .05998 in
BEAM DENSITY: .283 lb/cu in
DAMPING MATERIAL THICKNESS: .004 in
DAMPING MATERIAL DENSITY: .036 lb/cu in

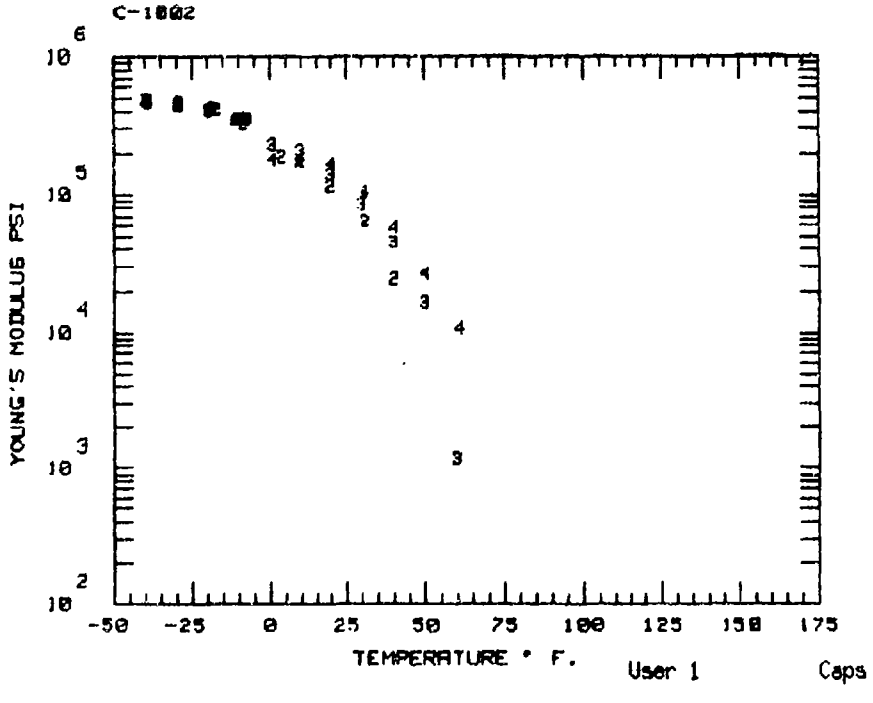
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	SHEAR MODULUS PSI	MATERIAL LOSS FACTOR
1	+0	2	244.5	448.3	.024192	3.4955E+03	.113410
2	+0	3	689.6	1205.7	.028684	6.6949E+03	.108419
3	+0	7	4651.1	7091.3	.029691	1.8841E+04	.085425
4	+1	4	1352.9	2217.0	.033838	8.4433E+03	.107244
5	+1	5	2237.6	3566.2	.034527	1.1779E+04	.104354
6	+11	2	244.3	443.9	.032991	3.2006E+03	.147755
7	+11	3	688.4	1186.3	.042309	5.9581E+03	.152685
8	+11	4	1350.9	2167.4	.050356	7.3440E+03	.154213
9	+11	5	2234.7	3486.1	.050780	1.0297E+04	.149766
10	+20	2	244.0	436.6	.053773	2.7439E+03	.224742
11	+20	3	687.4	1161.7	.061348	5.1304E+03	.210283
12	+20	4	1349.2	2103.9	.078934	6.1100E+03	.234516
13	+21	5	2231.8	3389.5	.085478	8.6743E+03	.248355
14	+31	2	243.8	425.7	.079914	2.2138E+03	.306401
15	+31	3	686.3	1123.9	.095435	4.0785E+03	.308267
16	+31	4	1347.1	2017.5	.128097	4.7020E+03	.375450
17	+31	5	2228.9	3253.4	.111211	6.8404E+03	.320443
18	+40	5	2226.3	3093.0	.154424	5.0561E+03	.457577
19	+41	2	243.5	409.9	.144068	1.5846E+03	.513288
20	+41	3	685.2	1071.8	.140103	2.9903E+03	.430108
21	+41	4	1345.1	1883.8	.198990	3.0721E+03	.603730
22	+50	3	684.2	1011.4	.202892	2.0608E+03	.619731
23	+50	4	1343.4	1732.5	.262308	1.8072E+03	.908239
24	+50	5	2223.4	2838.4	.173211	3.0405E+03	.573411
25	+51	2	243.3	383.3	.249515	9.2709E+02	.855734
26	+60	2	243.1	349.3	.197137	6.3231E+02	.595041
27	+60	3	683.1	933.3	.255434	1.2803E+03	.820872
28	+71	3	682.0	802.2	.222548	5.0110E+02	.375289
29	+81	2	242.6	279.3	.183037	1.5241E+02	.865225
30	+81	3	680.9	743.2	.192325	2.3751E+02	1.355959
31	+91	2	242.4	265.0	.147061	8.9404E+01	.984408
32	+91	3	679.8	716.2	.127304	1.3948E+02	1.353856

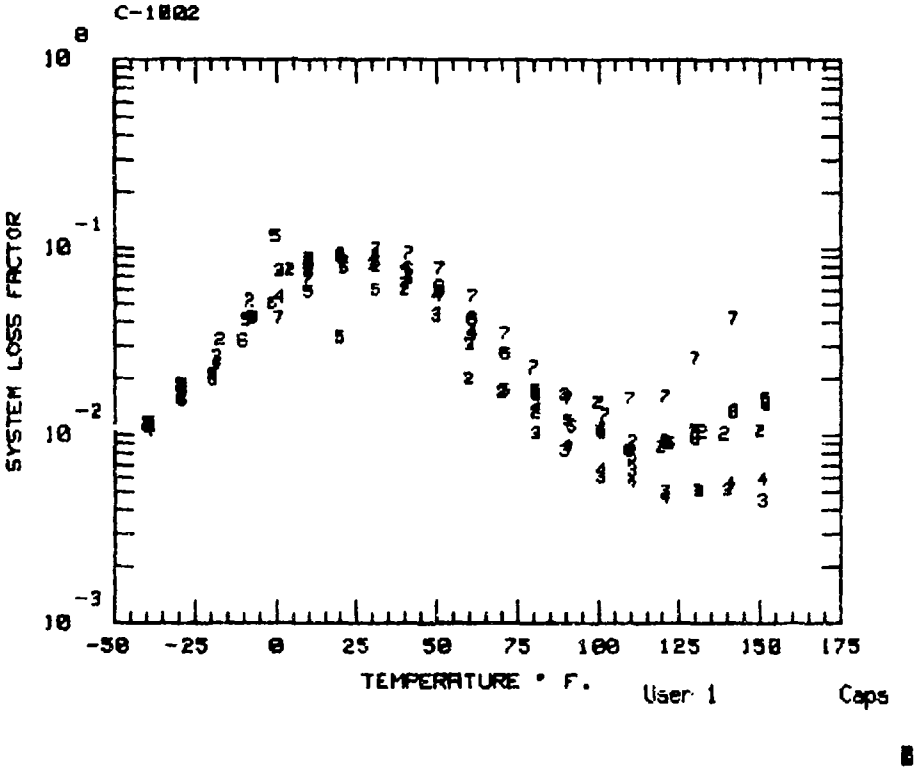
MATERIAL CODE: ED0358
MATERIAL: 1038B
MANUFACTURER: BETHAM
REMARKS: TEST 2 93667-22
DATE: 29 Dec 1987
ENTERED BY: TCM
BEAM MATERIAL: STAINLESS STEEL
BEAM NUMBER: 7-163 & 7-184
BEAM TYPE: SANDWICH BEAM
BEAM LENGTH: 7 in
BEAM THICKNESS: .05998 in
BEAM DENSITY: .283 lb/cu in
DAMPING MATERIAL THICKNESS: .004 in
DAMPING MATERIAL DENSITY: .036 lb/cu in

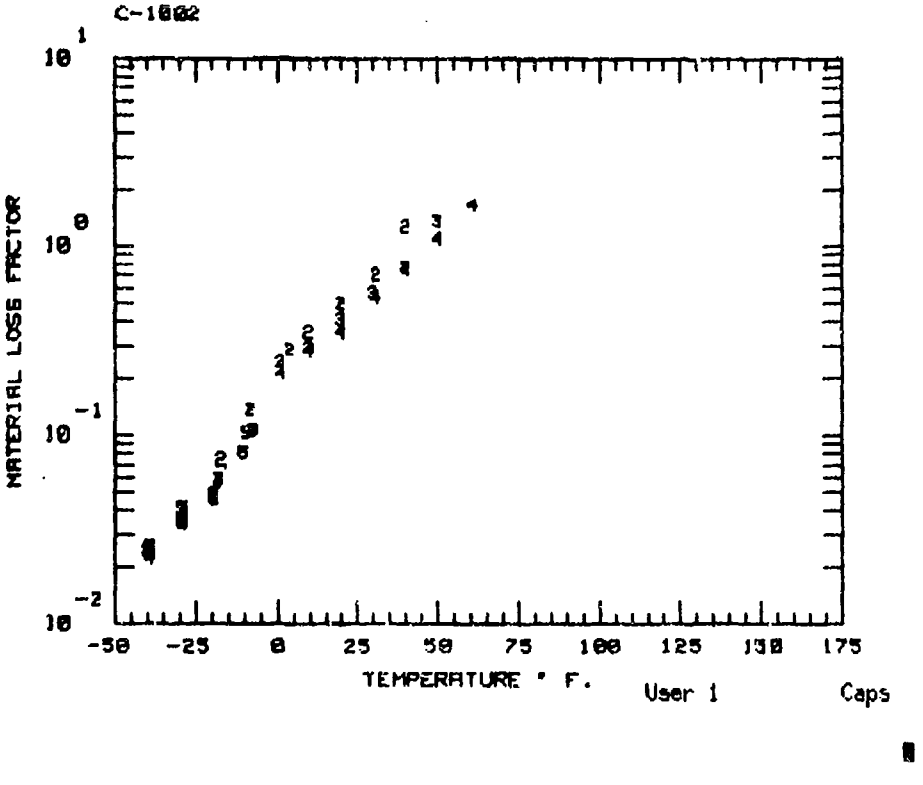
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	SHEAR MODULUS PSI	MATERIAL LOSS FACTOR
33	+101	2	242.1	257.7	.111020	6.1119E+01	.991128
34	+101	3	678.8	702.0	.088599	9.0690E+01	1.360343
35	+111	2	241.9	252.7	.082917	4.2444E+01	1.000037
36	+111	3	677.7	694.0	.061636	6.5087E+01	1.272916
37	+121	2	241.7	249.4	.061373	3.0859E+01	.976878
38	+122	3	676.5	688.3	.042481	4.9564E+01	1.147609
39	+130	3	675.7	684.5	.031170	3.7632E+01	1.069113
40	+132	2	241.4	247.3	.043694	2.3838E+01	.876825
41	+140	2	241.2	245.7	.041349	1.8327E+01	1.057432
42	+140	3	674.6	681.3	.023360	2.9958E+01	.993679
43	+150	2	241.0	244.3	.032754	1.3982E+01	1.079199
44	+150	3	673.5	679.2	.019112	2.6099E+01	.925735
45	+160	3	672.5	677.6	.017243	2.3985E+01	.903598
46	+161	2	240.7	243.2	.026594	1.0758E+01	1.123595
47	+174	2	240.4	242.2	.019702	8.5375E+00	1.037945
48	+174	3	671.0	675.5	.012312	2.1801E+01	.704707
49	+182	2	240.2	241.7	.020577	7.2277E+00	1.272622
50	+182	3	670.1	674.7	.010959	2.2126E+01	.616785
51	+191	2	240.0	241.4	.019927	6.8819E+00	1.290499
52	+191	3	669.1	674.0	.009288	2.2888E+01	.504412
53	+192	2	240.0	240.6	.014561	4.1115E+00	1.562293
54	+198	3	668.4	673.0	.010379	2.1944E+01	.585920

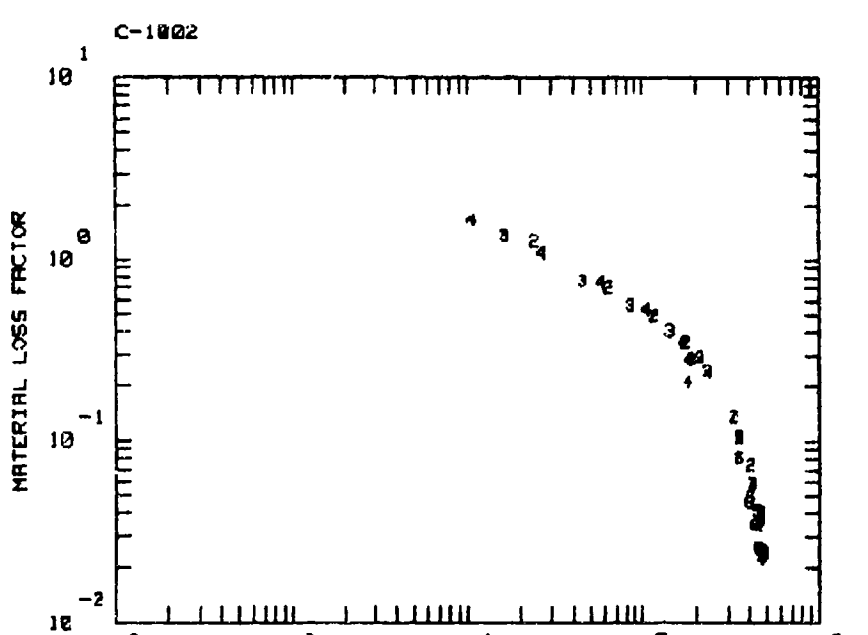

C-1002
TEMPERATURE DEG F (DELTA=25)
20
-30
MODULUS
LOSS FACTOR
YOUNG'S MODULUS psi
FREQUENCY HERTZ
REDUCED FREQUENCY HERTZ
10^{2}
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{6}
10^{5}
10^{4}
10^{3}
10^{2}
10^{4}
10^{3}
10^{2}
10^{1}
10^{0}
10^{6}
10^{7}
10^{8}
10^{9}
10^{10}
10^{11}
10^{12}
10^{13}
10^{14}


C-1002
FREQUENCY Hz
TEMPERATURE ° F.
User 1
Caps


C-1002
YOUNG'S MODULUS PSI
TEMPERATURE ° F.
User 1
Caps


C-1002
SYSTEM LOSS FACTOR
TEMPERATURE ° F.
User 1
Caps


C-1002
MATERIAL LOSS FACTOR
TEMPERATURE ° F.
User 1
Caps



MATERIAL CODE: ED0376
MATERIAL: C-1002

UNITS ARE ENGLISH
LOG(M)=LOG(ML)+(2LOG(MROM/ML))/(1+(FQROM/FR)^SLOPE)

TZERO	FQROM	MROM	SLOPE	ML
200.0	0.000E+00	0.000E+00	0.000	0.000E+00

LOG(ETA)=LOG(ETFROL)+((SH+SL)A+(SL-SH)(1-SQR(1+A^2)))C/2

TZERO	ETFROL	SL	SH	FROL	C
200.0	0.000	0.000	0.000	0.000E+00	0.000

LOG(FR)=LOG(F)-12(T-T0)/(525+T-T0)
A=(LOG(FR)-LOG(FROL))/C

MATERIAL CODE: ED0376
MATERIAL: C-1002
MANUFACTURER: TECH PROD CORP
REMARKS: 93479
DATE: 18 Jan 1988
ENTERED BY: BJF
BEAM MATERIAL: STAINLESS STEEL
BEAM NUMBER: SS-7-152
BEAM TYPE: FREE LAYER ONE SIDE
BEAM LENGTH: 7 in
BEAM THICKNESS: .06002 in
BEAM DENSITY: .283 lb/cu in
DAMPING MATERIAL THICKNESS: .11632 in
DAMPING MATERIAL DENSITY: .046 lb/cu in

INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	YOUNG'S MODULUS PSI	MATERIAL LOSS FACTOR
1	-40	2	245.5	298.8	.011547	4.8749E+05	.024404
2	-39	3	685.8	835.8	.011358	4.8791E+05	.023945
3	-39	4	1351.4	1631.8	.010528	4.7445E+05	.022611
4	-39	5	2236.4	2682.8	.011496	4.6223E+05	.025031
5	-39	6	3354.0	3997.8	.011765	4.5469E+05	.025974
6	-29	2	245.2	295.6	.018467	4.6719E+05	.039786
7	-29	3	685.4	826.7	.017232	4.6652E+05	.037090
8	-29	4	1349.9	1616.7	.015400	4.5695E+05	.033648
9	-29	5	2234.1	2654.2	.018539	4.4204E+05	.041224
10	-29	6	3350.1	3954.7	.015346	4.3448E+05	.034622
11	-19	5	2231.7	2606.7	.021180	4.0839E+05	.048989
12	-19	6	3346.1	3885.3	.019644	4.0169E+05	.046100
13	-18	3	684.9	808.1	.026026	4.2269E+05	.058786
14	-18	4	1348.3	1584.1	.024183	4.1840E+05	.055164
15	-17	2	244.9	287.2	.032167	4.1225E+05	.073688
16	-10	6	3342.6	3770.4	.031901	3.4805E+05	.080885
17	-9	5	2229.4	2524.1	.041063	3.5078E+05	.103013
18	-8	2	244.7	273.1	.052109	3.2296E+05	.136352
19	-8	4	1346.8	1527.5	.042349	3.5281E+05	.105739
20	-7	3	684.4	776.0	.042401	3.4931E+05	.105964
21	-1	6	3339.0	2434.8	.050363	0.0000E+00	0.000000
22	+0	5	2227.3	1914.0	.115518	0.0000E+00	0.000000
23	+1	3	684.1	721.1	.075828	2.3149E+05	.243582
24	+1	4	1345.5	1365.7	.054597	1.7885E+05	.210709
25	+1	7	4656.3	3565.5	.042393	0.0000E+00	0.000000
26	+4	2	244.4	250.1	.076609	1.8859E+05	.283358
27	+10	2	244.3	247.1	.089227	1.7262E+05	.351345
28	+10	3	683.7	710.1	.084786	2.0960E+05	.290967
29	+10	4	1344.2	1365.7	.072895	1.7985E+05	.279808
30	+10	5	2224.9	1914.0	.058470	0.0000E+00	0.000000
31	+10	6	3334.7	2329.2	.081109	0.0000E+00	0.000000
32	+10	7	4651.9	3514.8	.069783	0.0000E+00	0.000000

MATERIAL CODE: ED0376
MATERIAL: C-1002
MANUFACTURER: TECH PROD CORP
REMARKS: 93479
DATE: 18 Jan 1988
ENTERED BY: BJF
BEAM MATERIAL: STAINLESS STEEL
BEAM NUMBER: SS-7-152
BEAM TYPE: FREE LAYER ONE SIDE
BEAM LENGTH: 7 in
BEAM THICKNESS: .06002 in
BEAM DENSITY: .283 lb/cu in
DAMPING MATERIAL THICKNESS: .11632 in
DAMPING MATERIAL DENSITY: .046 lb/cu in

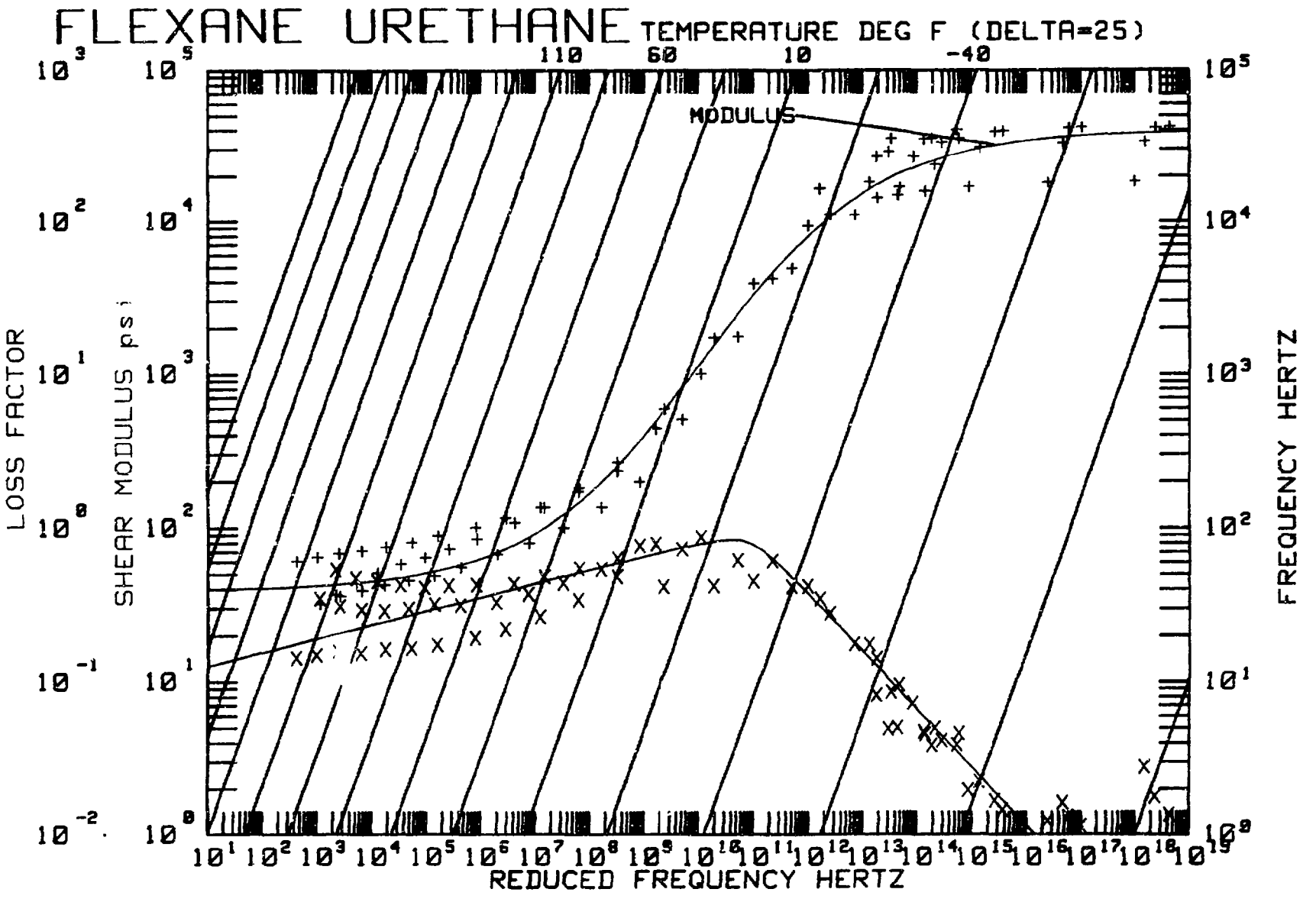
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	YOUNG'S MODULUS PSI	MATERIAL LOSS FACTOR
33	+20	2	244.1	236.2	.092080	1.1543E+05	.492366
34	+20	3	683.3	674.8	.088789	1.4074E+05	.406467
35	+20	4	1342.8	1351.7	.086808	1.6694E+05	.351166
36	+20	5	2222.6	1914.0	.032935	0.0000E+00	0.000000
37	+21	6	3330.3	2255.3	.079260	0.0000E+00	0.000000
38	+21	7	4646.5	3385.1	.084136	0.0000E+00	0.000000
39	+30	3	682.8	644.7	.081977	8.5456E+04	.560588
40	+31	2	243.8	226.0	.080172	6.4197E+04	.701045
41	+31	4	1341.1	1286.4	.091870	1.0468E+05	.532912
42	+31	5	2220.0	1914.0	.059853	0.0000E+00	0.000000
43	+31	6	3326.4	2154.8	.084772	0.0000E+00	0.000000
44	+31	7	4641.6	3241.1	.100589	0.0000E+00	0.000000
45	+40	2	243.6	217.6	.059843	2.4398E+04	1.270924
46	+40	3	682.4	621.8	.064497	4.5437E+04	.768016
47	+40	4	1339.8	1234.6	.078774	5.7906E+04	.756701
48	+41	5	2217.6	1914.0	.068832	0.0000E+00	0.000000
49	+41	6	3322.5	2067.8	.077504	0.0000E+00	0.000000
50	+41	7	4636.7	3101.6	.094073	0.0000E+00	0.000000
51	+50	3	682.0	604.6	.043792	1.6441E+04	1.357394
52	+50	4	1338.4	1198.4	.056309	2.6844E+04	1.095207
53	+51	5	2215.3	1914.0	.058313	0.0000E+00	0.000000
54	+51	6	3318.5	2001.0	.061815	0.0000E+00	0.000000
55	+51	7	4631.8	3004.0	.077836	0.0000E+00	0.000000
56	+60	2	243.1	210.7	.020039	0.0000E+00	0.000000
57	+60	3	681.5	595.0	.030386	1.1740E+03	0.000000
58	+61	4	1336.8	1178.3	.035217	1.0738E+04	1.652386
59	+61	5	2213.0	1914.0	.041310	0.0000E+00	0.000000
60	+61	6	3314.6	1958.5	.041804	0.0000E+00	0.000000
61	+61	7	4626.9	2937.1	.055489	0.0000E+00	0.000000
62	+70	2	242.9	209.4	.016890	0.0000E+00	0.000000
63	+71	3	681.1	590.5	.017480	0.0000E+00	0.000000
64	+71	5	2210.6	1914.0	.027277	0.0000E+00	0.000000

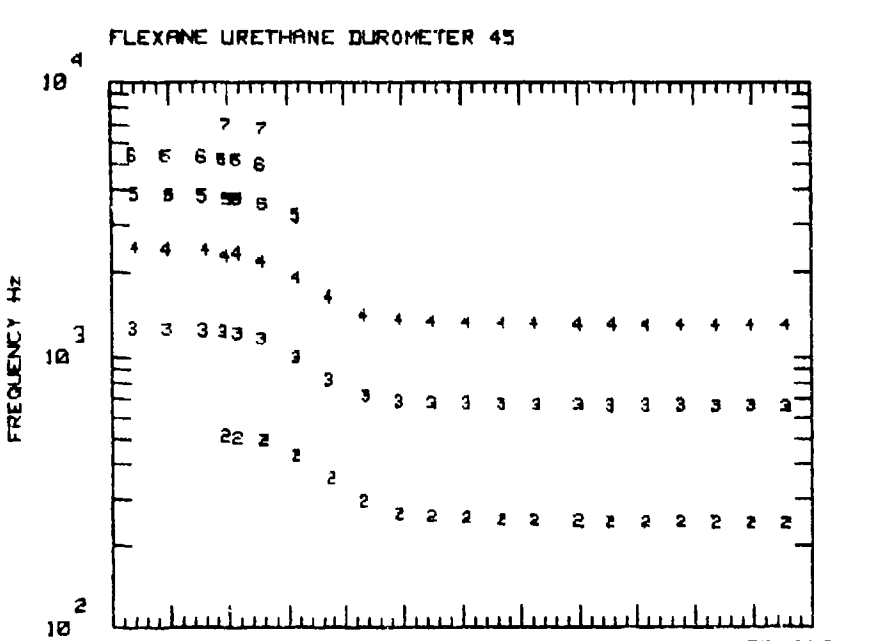
MATERIAL CODE: ED0376
MATERIAL: C-1002
MANUFACTURER: TECH PROD CORP
REMARKS: 93479
DATE: 18 Jan 1988
ENTERED BY: BJF
BEAM MATERIAL: STAINLESS STEEL
BEAM NUMBER: SS-7-152
BEAM TYPE: FREE LAYER ONE SIDE
BEAM LENGTH: 7 in
BEAM THICKNESS: .06002 in
BEAM DENSITY: .283 lb/cu in
DAMPING MATERIAL THICKNESS: .11632 in
DAMPING MATERIAL DENSITY: .046 lb/cu in

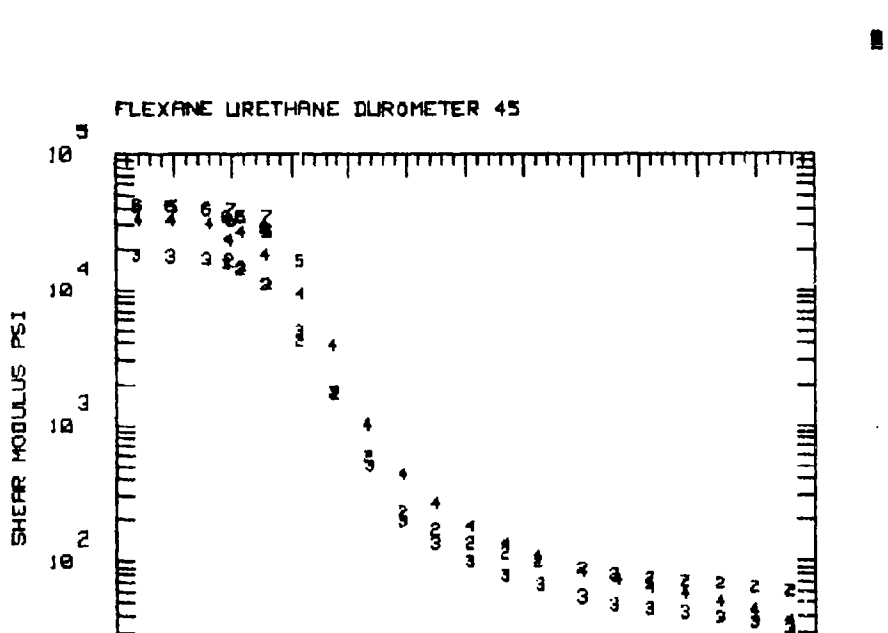
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	YOUNG'S MODULUS PSI	MATERIAL LOSS FACTOR
65	+71	6	3310.6	1934.9	.027177	0.0000E+00	0.000000
66	+71	7	4622.0	2890.8	.034859	0.0000E+00	0.000000
67	+80	7	4617.5	2866.5	.023115	0.0000E+00	0.000000
68	+81	2	242.6	208.6	.013407	0.0000E+00	0.000000
69	+81	3	680.6	587.9	.010287	0.0000E+00	0.000000
70	+81	4	1333.9	1158.7	.013839	0.0000E+00	0.000000
71	+81	5	2208.3	1914.0	.017220	0.0000E+00	0.000000
72	+81	6	3306.7	1920.3	.016594	0.0000E+00	0.000000
73	+90	2	242.4	208.4	.016449	0.0000E+00	0.000000
74	+90	3	680.2	585.5	.008320	0.0000E+00	0.000000
75	+91	4	1332.4	1154.5	.008942	0.0000E+00	0.000000
76	+91	5	2205.9	1911.3	.012042	0.0000E+00	0.000000
77	+91	7	4612.1	2849.2	.015759	0.0000E+00	0.000000
78	+92	6	3302.3	1911.9	.011203	0.0000E+00	0.000000
79	+100	2	242.2	208.4	.015067	0.0000E+00	0.000000
80	+101	3	679.8	585.0	.006025	0.0000E+00	0.000000
81	+101	4	1330.9	1151.5	.006537	0.0000E+00	0.000000
82	+101	5	2203.6	1905.7	.010421	0.0000E+00	0.000000
83	+101	6	3298.8	1905.7	.010769	0.0000E+00	0.000000
84	+102	7	4606.7	2838.5	.012699	0.0000E+00	0.000000
85	+110	6	3295.2	1900.0	.008288	0.0000E+00	0.000000
86	+110	7	4602.8	2830.6	.015732	0.0000E+00	0.000000
87	+111	2	241.9	208.3	.009211	0.0000E+00	0.000000
88	+111	3	679.3	583.5	.006503	0.0000E+00	0.000000
89	+111	4	1329.5	1149.1	.005711	0.0000E+00	0.000000
90	+111	5	2201.2	1900.1	.007767	0.0000E+00	0.000000
91	+120	2	241.7	207.6	.008715	0.0000E+00	0.000000
92	+121	3	678.9	582.2	.005076	0.0000E+00	0.000000
93	+121	4	1328.0	1146.4	.004657	0.0000E+00	0.000000
94	+121	6	3290.9	1894.7	.009257	0.0000E+00	0.000000
95	+121	7	4597.4	2818.1	.016222	0.0000E+00	0.000000
96	+122	5	2198.7	1894.5	.009043	0.0000E+00	0.000000

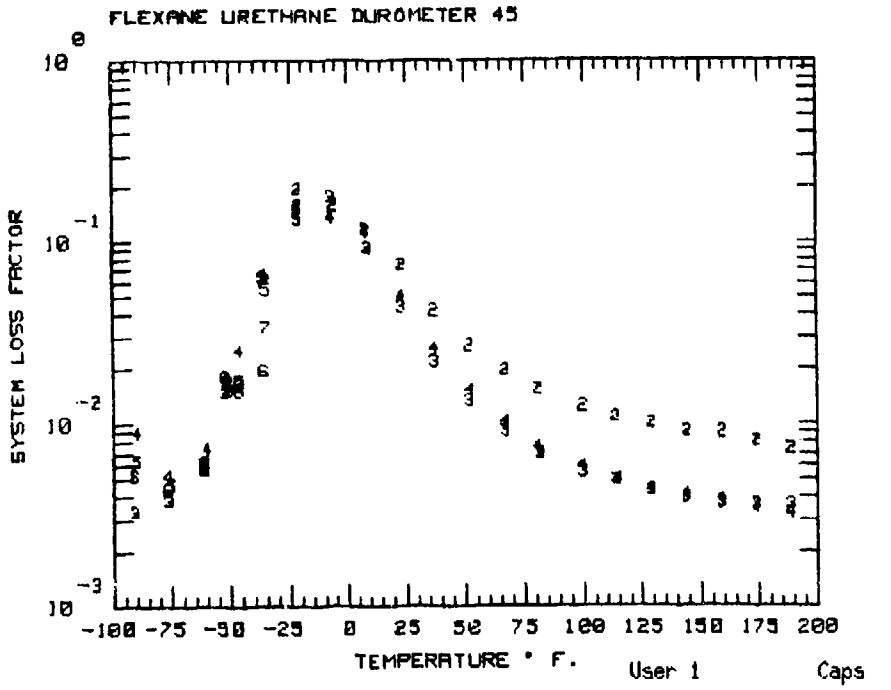
MATERIAL CODE: ED0376
MATERIAL: C-1002
MANUFACTURER: TECH PROD CORP
REMARKS: 93479
DATE: 18 Jan 1988
ENTERED BY: BJF
BEAM MATERIAL: STAINLESS STEEL
BEAM NUMBER: SS-7-152
BEAM TYPE: FREE LAYER ONE SIDE
BEAM LENGTH: 7 in
BEAM THICKNESS: .06002 in
BEAM DENSITY: .283 lb/cu in
DAMPING MATERIAL THICKNESS: .11632 in
DAMPING MATERIAL DENSITY: .046 lb/cu in

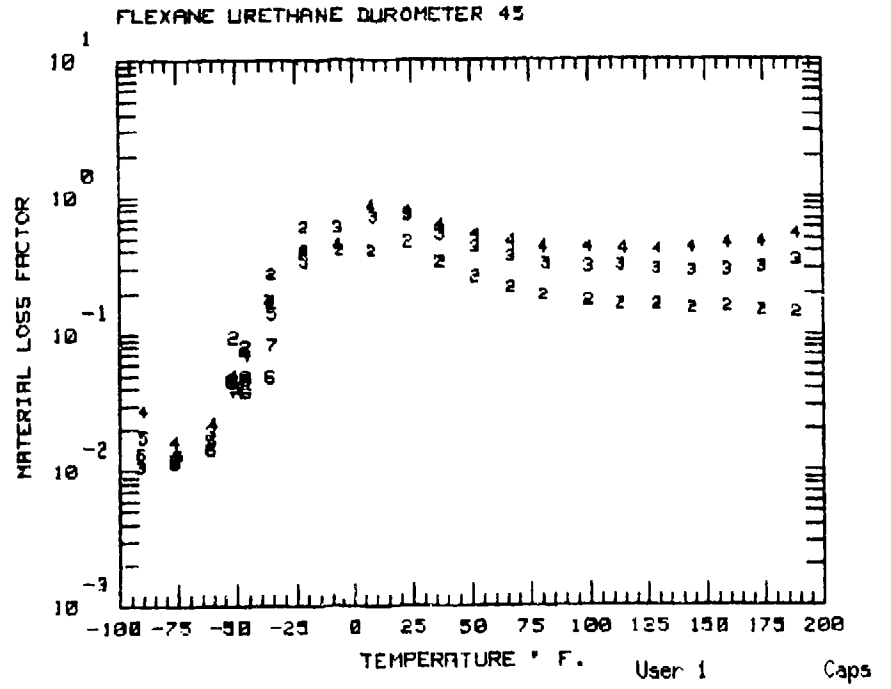
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	YOUNG'S MODULUS PSI	MATERIAL LOSS FACTOR
97	+130	5	2196.8	1889.1	.010417	0.0000E+00	0.000000
98	+130	6	3287.3	1888.8	.009711	0.0000E+00	0.000000
99	+130	7	4593.0	2810.8	.025703	0.0000E+00	0.000000
100	+131	3	678.5	581.5	.005122	0.0000E+00	0.000000
101	+131	4	1326.6	1143.8	.005139	0.0000E+00	0.000000
102	+132	2	241.4	207.2	.010418	0.0000E+00	0.000000
103	+139	2	241.3	206.8	.010209	0.0000E+00	0.000000
104	+140	3	678.1	580.6	.005157	0.0000E+00	0.000000
105	+141	4	1325.1	1141.3	.005516	0.0000E+00	0.000000
106	+142	5	2194.0	1882.4	.013156	0.0000E+00	0.000000
107	+142	6	3282.6	1882.3	.013363	0.0000E+00	0.000000
108	+142	7	4587.1	2810.6	.042042	0.0000E+00	0.000000
109	+150	2	241.0	206.7	.010577	0.0000E+00	0.000000
110	+151	3	677.6	579.3	.004517	0.0000E+00	0.000000
111	+151	4	1323.6	1138.8	.005801	0.0000E+00	0.000000
112	+152	5	2191.6	1875.5	.015531	0.0000E+00	0.000000
113	+152	6	3278.7	1875.1	.014707	0.0000E+00	0.000000

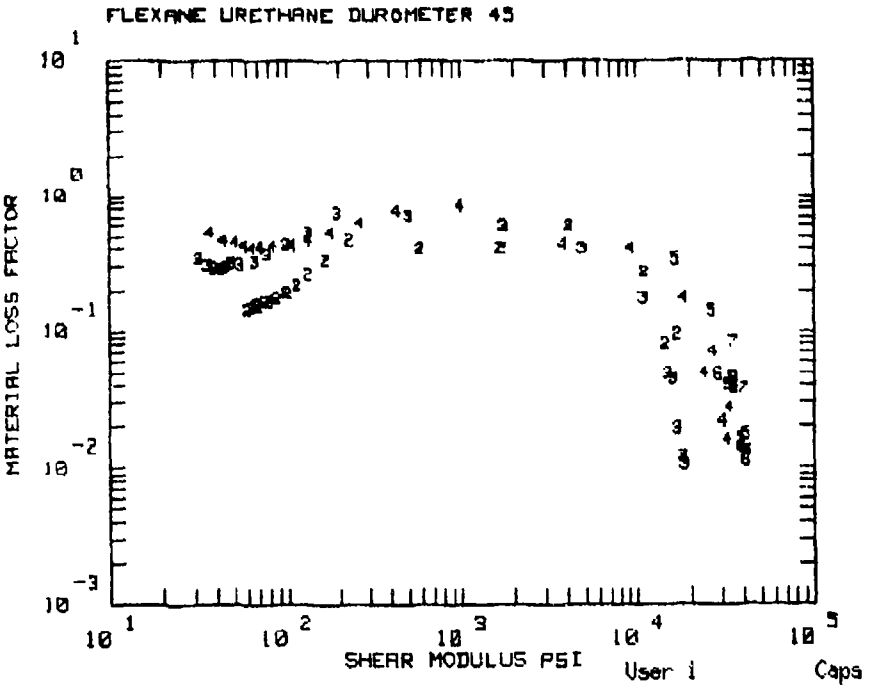

FLEXANE URETHANE
TEMPERATURE DEG F (DELTA=25)
110
60
10
-40
MODULUS
LOSS FACTOR
SHEAR MODULUS psi
FREQUENCY HERTZ
REDUCED FREQUENCY HERTZ


FLEXANE URETHANE DUROMETER 45
FREQUENCY Hz
10^4
10^3
10^2
-100 -75 -50 -25 0 25 50 75 100 125 150 175 200
TEMPERATURE ° F.
User 1
Caps


FLEXANE URETHANE DUROMETER 45
SHEAR MODULUS PSI
10^5
10^4
10^3
10^2
10^1
-100 -75 -50 -25 0 25 50 75 100 125 150 175 200
TEMPERRATURE ° F.
User 1
Caps


FLEXANE URETHANE DUROMETER 45
SYSTEM LOSS FACTOR
10^0
10^-1
10^-2
10^-3
-100 -75 -50 -25 0 25 50 75 100 125 150 175 200
TEMPERATURE ° F.
User 1
Caps


FLEXANE URETHANE DUROMETER 45
MATERIAL LOSS FACTOR
10^1
10^0
10^-1
10^-2
10^-3
-100 -75 -50 -25 0 25 50 75 100 125 150 175 200
TEMPERATURE ° F.
User 1
Caps



MATERIAL CODE: ED0632
MATERIAL: FLEXANE 45 DURO

UNITS ARE ENGLISH
LOG(M)=LOG(ML)+(2LOG(MROM/ML))/(1+(FQROM/FR)^SLOPE)

TZERO	FQROM	MROM	SLOPE	ML
200.0	1.257E+10	1.258E+03	0.274	3.936E+01

LOG(ETA)=LOG(ETFROL)+((SH+SL)A+(SL-SH)(1-SQR(1+A^2)))C/2

TZERO	ETFROL	SL	SH	FROL	C
200.0	.800	.090	-.380	8.447E+10	.400

LOG(FR)=LOG(F)-12(T-T0)/(525+T-T0)
A=(LOG(FR)-LOG(FROL))/C

MATERIAL CODE: ED0632
MATERIAL: FLEXANE 45 DURO
MANUFACTURER: DEVCON
REMARKS: SANDWICH
DATE: 7 Sep 1988
ENTERED BY: SEO
BEAM MATERIAL: STAINLESS STEEL
BEAM NUMBER: SS-7-03 & SS-7-07
BEAM TYPE: SANDWICH BEAM
BEAM LENGTH: 7 in
BEAM THICKNESS: .05912 in
BEAM DENSITY: .263 lb/cu in
DAMPING MATERIAL THICKNESS: .01313 in
DAMPING MATERIAL DENSITY: .03962 lb/cu in

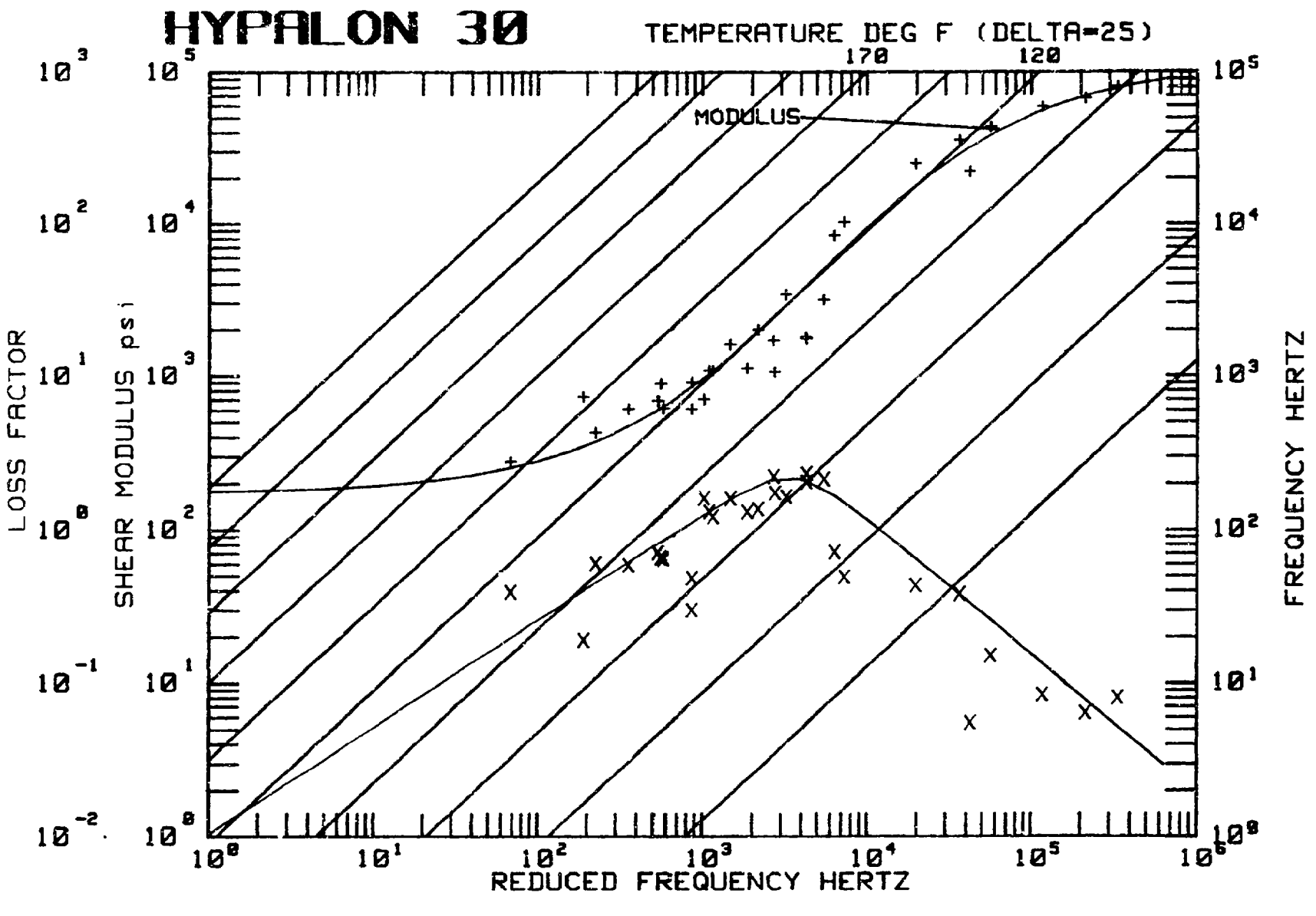
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	SHEAR MODULUS PSI	MATERIAL LOSS FACTOR
1	-91	3	680.1	1265.5	.003304	1.8148E+04	.010532
2	-91	6	3316.4	5385.2	.005238	4.1751E+04	.013365
3	-90	4	1334.6	2455.2	.008882	3.3184E+04	.027466
4	-90	5	2212.4	3871.3	.006277	4.1174E+04	.017486
5	-76	3	679.0	1260.4	.003830	1.7810E+04	.012128
6	-76	4	1332.6	2441.7	.005220	3.2282E+04	.015979
7	-76	6	3310.9	5366.8	.004424	4.1239E+04	.011273
8	-75	5	2208.9	3861.4	.004635	4.0825E+04	.012890
9	-61	3	677.9	1246.1	.006274	1.6694E+04	.019361
10	-61	5	2205.5	3819.5	.006017	3.8640E+04	.016486
11	-61	6	3305.4	5304.2	.005667	3.9052E+04	.014349
12	-60	4	1330.4	2414.3	.007384	3.0358E+04	.022097
13	-52	3	677.3	1232.3	.014929	1.5651E+04	.044965
14	-52	6	3302.1	5182.8	.018114	3.4837E+04	.045409
15	-51	2	243.9	509.5	.017004	1.6555E+04	.093824
16	-51	4	1328.1	2309.7	.017838	2.3618E+04	.049164
17	-50	5	2202.9	3702.3	.015425	3.2802E+04	.040635
18	-50	7	4607.0	6947.6	.015306	3.9709E+04	.038154
19	-46	2	243.8	501.6	.016274	1.4163E+04	.080511
20	-46	3	676.8	1219.1	.016752	1.4715E+04	.049333
21	-46	4	1328.4	2359.6	.025000	2.6643E+04	.071626
22	-46	5	2202.0	3736.7	.017479	3.4491E+04	.046586
23	-46	6	3269.9	5182.5	.015092	3.4905E+04	.037838
24	-36	3	676.1	1157.4	.064024	1.0901E+04	.173764
25	-36	4	1326.9	2196.3	.066041	1.7968E+04	.172402
26	-36	6	3296.3	4975.5	.019455	2.8569E+04	.048502
27	-35	2	243.5	489.8	.062653	1.0964E+04	.274868
28	-35	5	2199.4	3555.7	.054584	2.6583E+04	.139469
29	-35	7	4599.5	6756.9	.033592	3.4675E+04	.084283
30	-21	2	243.1	430.5	.195071	4.1520E+03	.601564
31	-21	3	675.0	992.9	.158210	4.8770E+03	.408807
32	-21	4	1324.8	1934.9	.158926	9.2593E+03	.411693

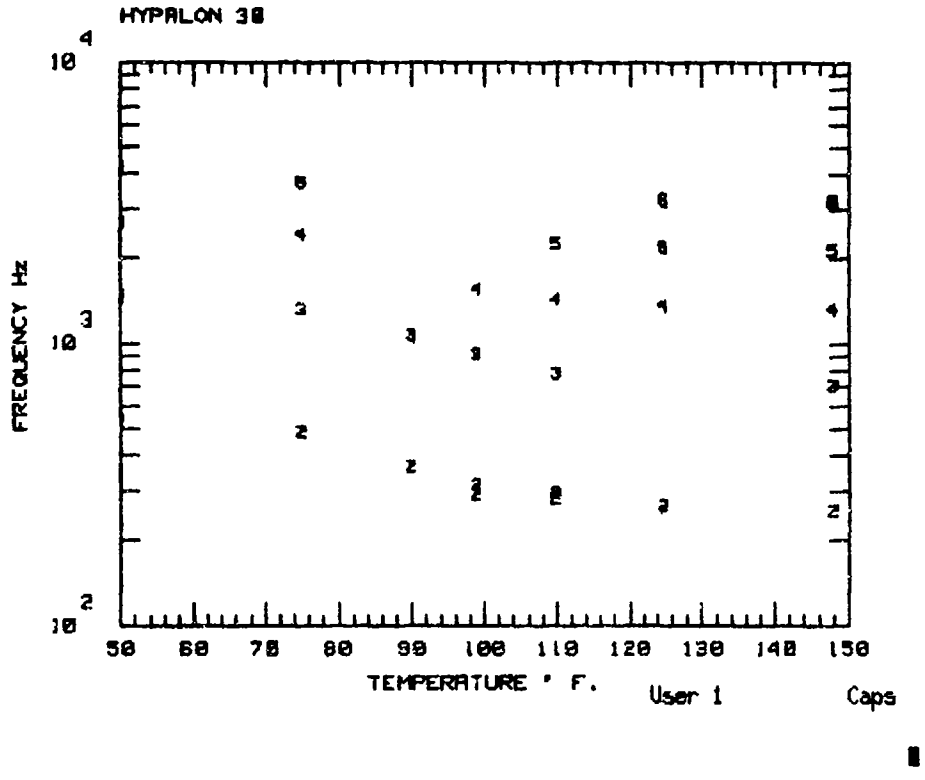
MATERIAL CODE: E00632
MATERIAL: FLEXANE 45 DURO
MANUFACTURER: DEVCON
REMARKS: SANDWICH
DATE: 7 Sep 1986
ENTERED BY: SEO
BEAM MATERIAL: STAINLESS STEEL
BEAM NUMBER: SS-7-03 & SS-7-07
BEAM TYPE: SANDWICH BEAM
BEAM LENGTH: 7 in
BEAM THICKNESS: .05912 in
BEAM DENSITY: .283 lb/cu in
DAMPING MATERIAL THICKNESS: .01313 in
DAMPING MATERIAL DENSITY: .03962 lb/cu in

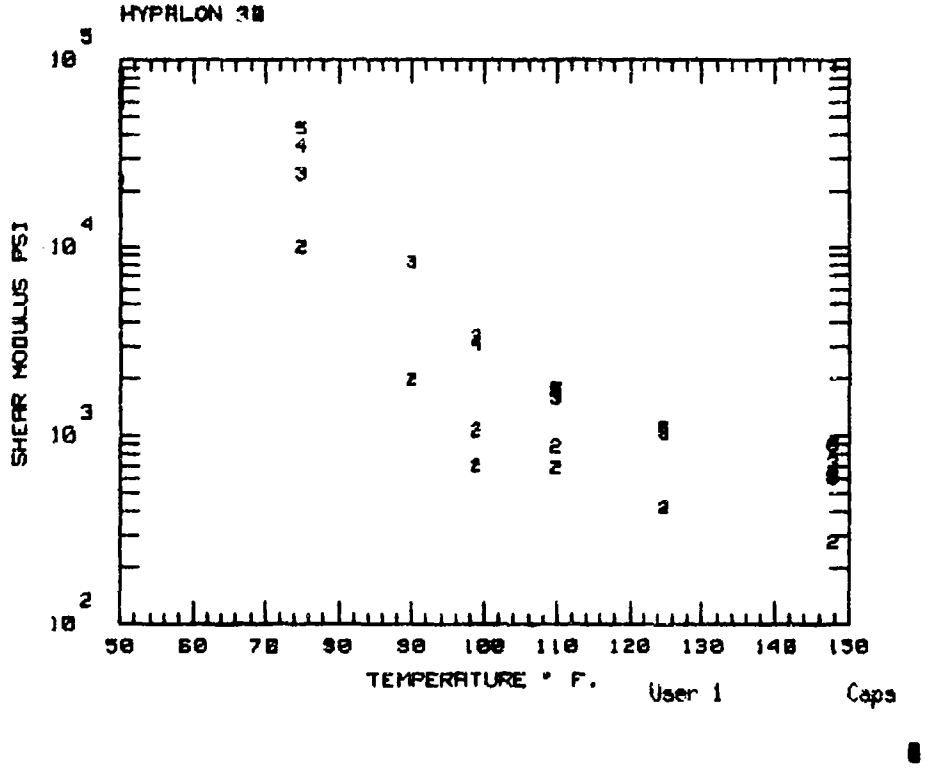
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	SHEAR MODULUS PSI	MATERIAL LOSS FACTOR
33	-21	5	2196.1	3237.1	.133523	1.6306E+04	.341685
34	-7	3	674.0	823.4	.176163	1.7385E+03	.606347
35	-7	4	1322.8	1642.0	.136799	3.8525E+03	.442825
36	-6	2	242.6	354.2	.159159	1.7005E+03	.412391
37	+8	2	242.2	291.9	.115542	5.8649E+02	.407541
38	+8	4	1320.7	1413.3	.113151	1.0028E+03	.859094
39	+9	3	672.9	718.8	.093132	5.0057E+02	.716814
40	+23	2	241.7	262.7	.074827	2.3098E+02	.475820
41	+23	3	671.9	687.5	.043863	1.9676E+02	.752581
42	+23	4	1318.5	1354.2	.050203	4.3538E+02	.773563
43	+37	2	241.3	256.5	.041717	1.6955E+02	.336591
44	+37	3	670.8	680.0	.021903	1.3457E+02	.532786
45	+37	4	1316.5	1334.4	.025608	2.6320E+02	.625820
46	+52	2	240.9	252.7	.026732	1.3434E+02	.260649
47	+52	3	669.8	675.2	.013391	9.9538E+01	.432082
48	+52	4	1314.4	1323.4	.015312	1.7891E+02	.538137
49	+67	2	240.4	250.4	.019488	1.1455E+02	.217055
50	+67	3	668.7	672.0	.009172	7.8993E+01	.368264
51	+67	4	1312.3	1316.5	.010253	1.3379E+02	.475303
52	+81	2	240.0	248.6	.015330	1.0040E+02	.190968
53	+81	4	1310.3	1311.7	.007440	1.0696E+02	.427439
54	+82	3	667.6	669.7	.006933	6.7129E+01	.324749
55	+100	2	239.5	246.8	.012375	8.8248E+01	.172126
56	+100	3	666.3	667.1	.005489	5.5095E+01	.310307
57	+100	4	1307.6	1306.6	.005876	8.4403E+01	.423775
58	+114	2	239.1	245.6	.010809	8.0102E+01	.163481
59	+114	3	665.3	665.4	.004932	4.8572E+01	.314382
60	+115	4	1305.4	1303.2	.004988	7.2464E+01	.416509
61	+129	2	238.6	244.7	.010085	7.5167E+01	.161020
62	+129	3	664.2	664.0	.004339	4.5285E+01	.295266
63	+129	4	1303.4	1300.3	.004304	6.3927E+01	.405297
64	+144	2	238.2	243.8	.009096	7.1059E+01	.152327

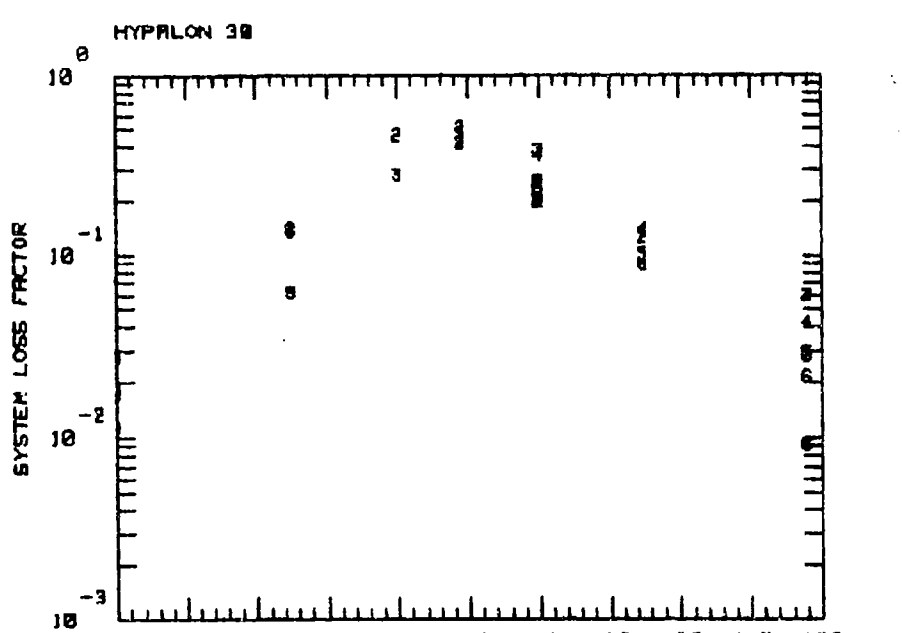
MATERIAL CODE: ED0632
MATERIAL: FLEXANE 45 DURO
MANUFACTURER: DEVCON
REMARKS: SANDWICH
DATE: 7 Sep 1988
ENTERED BY: SEO
BEAM MATERIAL: STAINLESS STEEL
BEAM NUMBER: SS-7-03 & SS-7-07
BEAM TYPE: SANDWICH BEAM
BEAM LENGTH: 7 in
BEAM THICKNESS: .05912 in
BEAM DENSITY: .283 lb/cu in
DAMPING MATERIAL THICKNESS: .01313 in
DAMPING MATERIAL DENSITY: .03962 lb/cu in

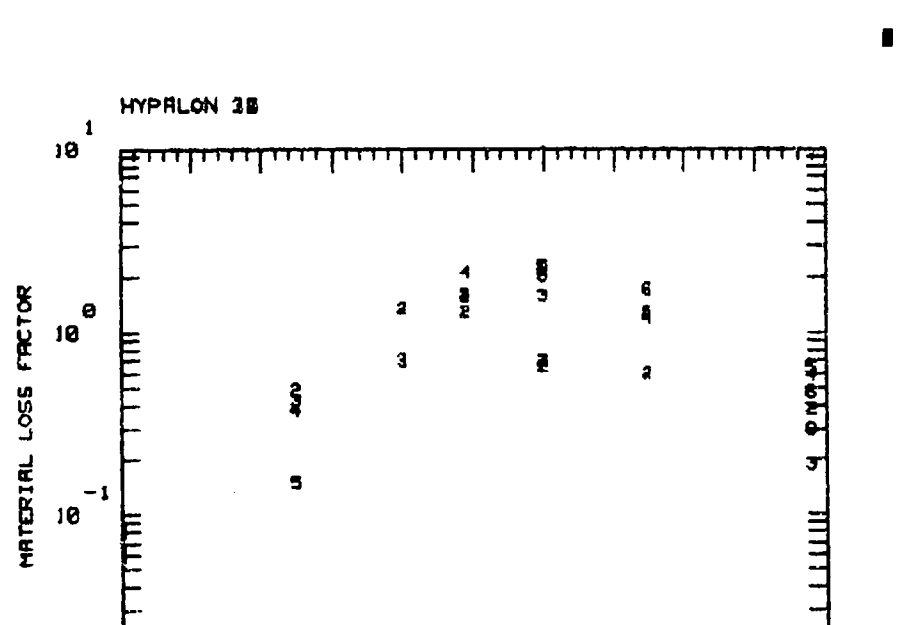
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	SHEAR MODULUS PSI	MATERIAL LOSS FACTOR
65	+144	3	663.1	662.6	.003943	4.2377E+01	.285391
66	+144	4	1301.3	1297.6	.004085	5.7885E+01	.422840
67	+159	2	237.7	243.1	.008983	6.7960E+01	.156155
68	+159	3	662.0	661.2	.003709	3.8973E+01	.290504
69	+159	4	1299.1	1294.7	.003805	5.0810E+01	.446461
70	+174	2	237.3	242.3	.008084	6.4248E+01	.147448
71	+174	3	660.9	659.7	.003593	3.5751E+01	.305383
72	+174	4	1297.0	1291.8	.003450	4.3784E+01	.467440
73	+189	2	236.8	241.5	.007329	6.0354E+01	.141104
74	+189	3	659.8	658.3	.003620	3.1848E+01	.343535
75	+189	4	1294.9	1288.9	.003275	3.6651E+01	.527489

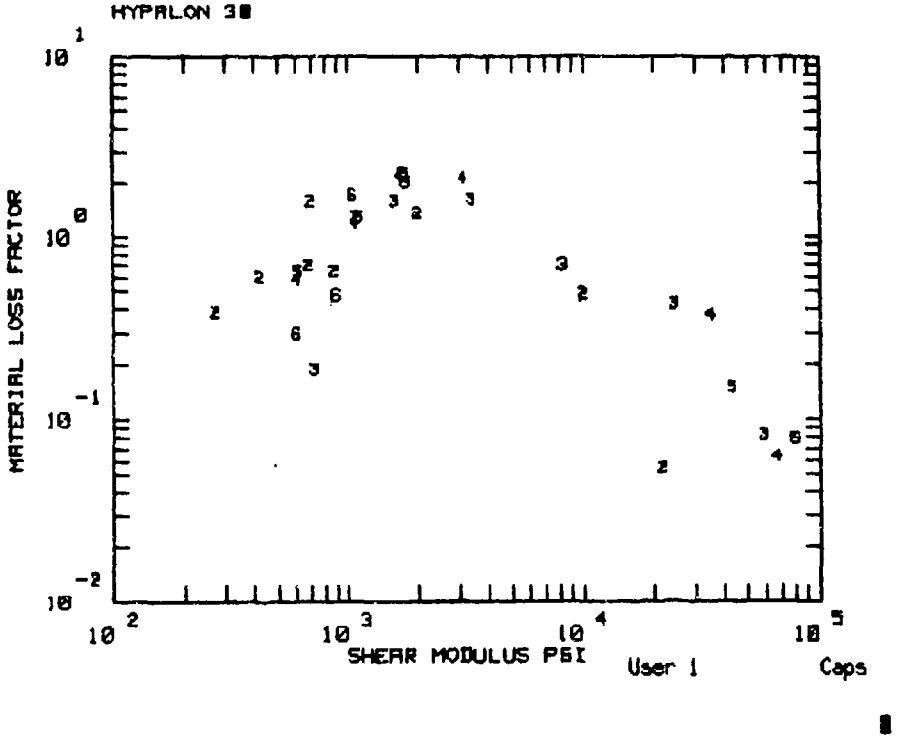

HYPALON 30
TEMPERATURE DEG F (DELTA=25)
170
120
MODULUS
LOSS FACTOR
SHEAR MODULUS psi
FREQUENCY HERTZ
REDUCED FREQUENCY HERTZ
10^3
10^2
10^1
10^0
10^-1
10^-2
10^5
10^4
10^3
10^2
10^1
10^0
10^0
10^1
10^2
10^3
10^4
10^5
10^6


HYPALON 30
FREQUENCY Hz
10^4
10^3
10^2
50 60 70 80 90 100 110 120 130 140 150
TEMPERATURE ° F.
User 1
Caps


HYPALON 30
SHEAR MODULUS PSI
10^5
10^4
10^3
10^2
50 60 70 80 90 100 110 120 130 140 150
TEMPERATURE ° F.
User 1
Caps


HYPALON 30
SYSTEM LOSS FACTOR
10^0
10^-1
10^-2
10^-3
50 60 70 80 90 100 110 120 130 140 150
TEMPERATURE ° F.
User 1
Caps


HYPALON 30
MATERIAL LOSS FACTOR
10^1
10^0
10^-1
10^-2
50 60 70 80 90 100 110 120 130 140 150
TEMPERATURE ° F.
User 1
Caps



MATERIAL CODE: ED0006
MATERIAL: HYPALON 30

UNITS ARE ENGLISH
LOG(M)=LOG(ML)+(2LOG(MROM/ML))/(1+(FQROM/FR)^SLOPE)

TZERO	FQROM	MROM	SLOPE	ML
122.0	4.908E+03	4.510E+03	0.651	1.741E+02

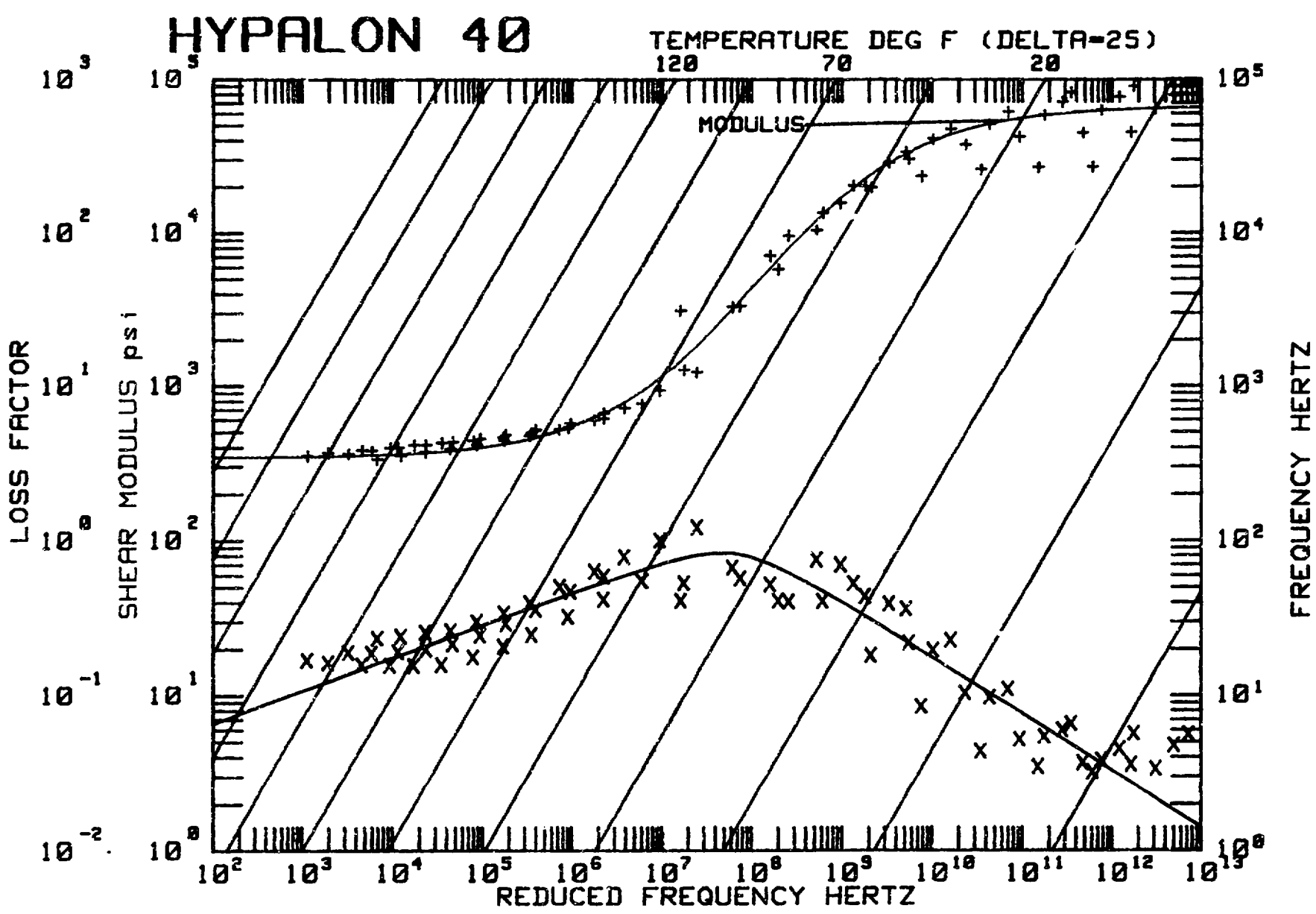
LOG(ETA)=LOG(ETFROL)+((SH+SL)A+(SL-SH)(1-SQR(1+A^2)))C/2

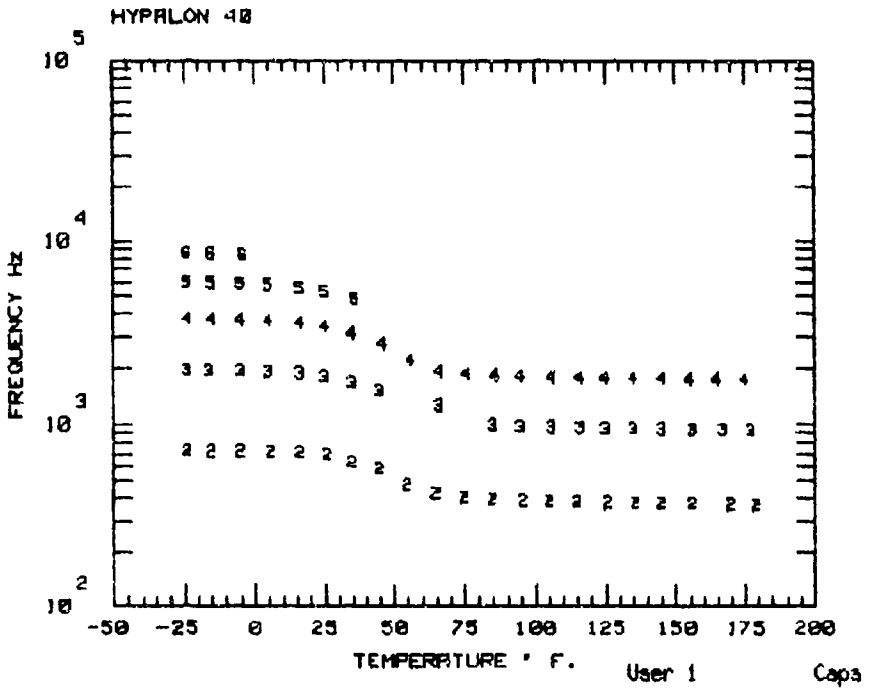
TZERO	ETFROL	SL	SH	FROL	C
122.0	2.200	.700	-.900	3.500E+03	.200

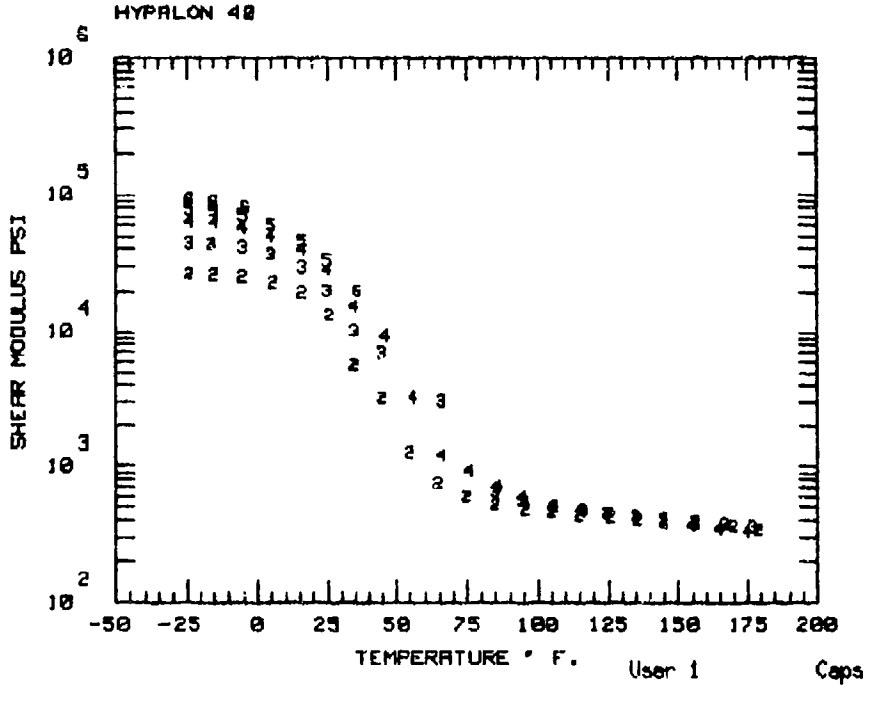
LOG(FR)=LOG(F)-12(T-T0)/(525+T-T0)
A=(LOG(FR)-LOG(FROL))/C

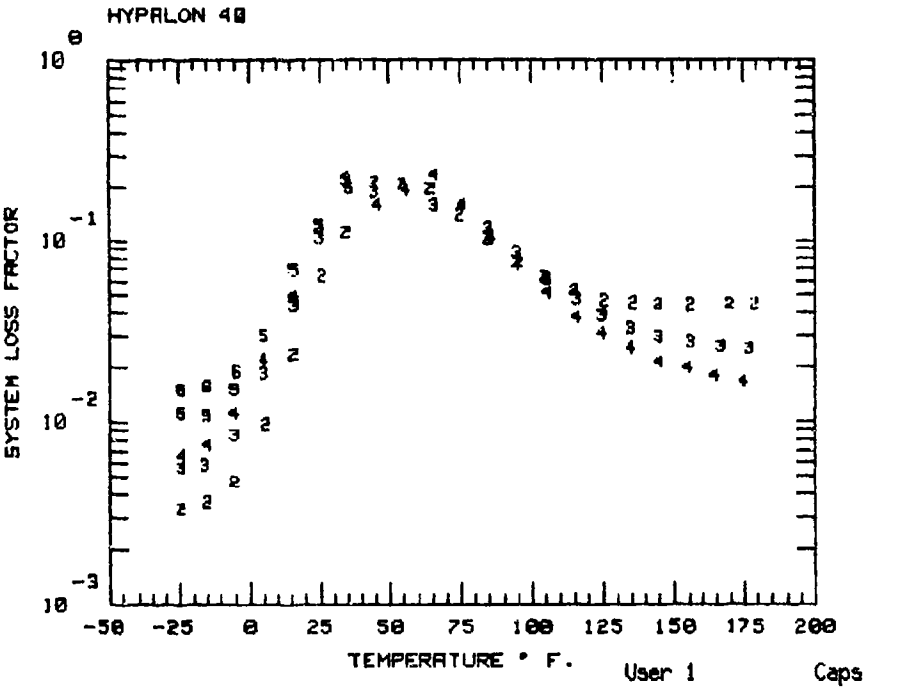
MATERIAL CODE: ED0006
MATERIAL: HYPALON 30
MANUFACTURER: DU PONT
REMARKS: S
DATE: 25 Nov 1986
ENTERED BY: SRR
BEAM MATERIAL: STAINLESS STEEL
BEAM NUMBER: SS-7-10 & SS-7-04
BEAM TYPE: SANDWICH BEAM
BEAM LENGTH: 7 in
BEAM THICKNESS: .0592375 in
BEAM DENSITY: .283 lb/cu in
DAMPING MATERIAL THICKNESS: .0208 in
DAMPING MATERIAL DENSITY: .04588 lb/cu in

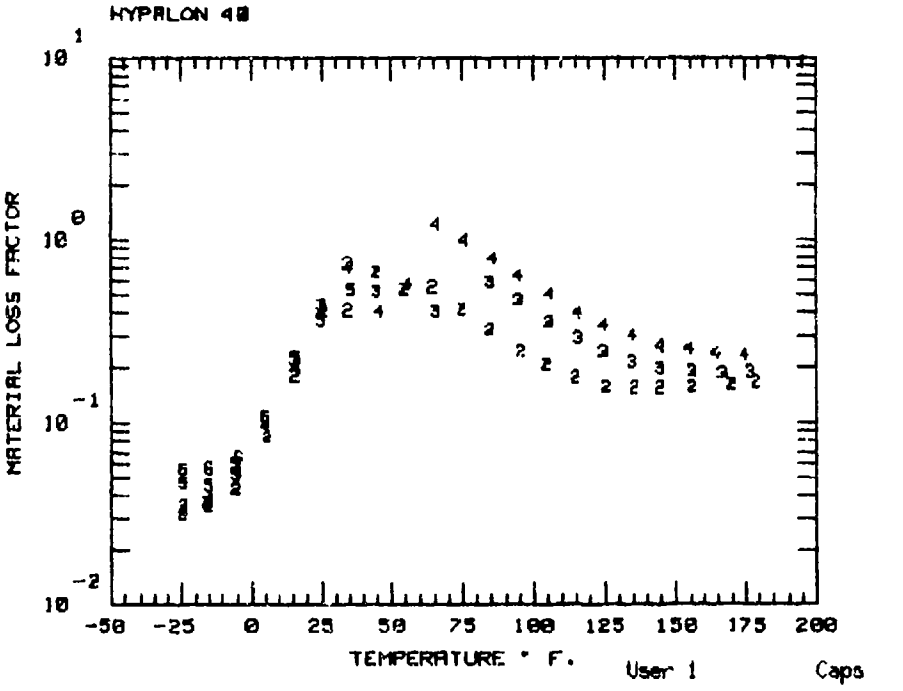
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	SHEAR MODULUS PSI	MATERIAL LOSS FACTOR
1	+50	2	237.6	526.9	.011350	2.1806E+04	.054558
2	+50	3	662.0	1462.4	.017570	5.8239E+04	.082566
3	+50	4	1303.0	2681.5	.018720	6.6225E+04	.062801
4	+50	5	2154.1	4206.9	.027380	7.9118E+04	.078920
5	+75	2	237.1	484.0	.140910	1.0091E+04	.484191
6	+75	3	660.8	1313.5	.135360	2.4474E+04	.424830
7	+75	4	1299.8	2426.0	.137680	3.5034E+04	.373608
8	+75	5	2148.8	3738.0	.061510	4.2977E+04	.148297
9	+90	2	236.7	364.3	.457860	1.9710E+03	1.340014
10	+90	3	660.1	1067.0	.278480	8.2496E+03	.702528
11	+99	2	236.5	289.9	.421980	6.9429E+02	1.577182
12	+99	2	236.5	312.6	.415230	1.0712E+03	1.288155
13	+99	3	659.7	914.0	.505470	3.3596E+03	1.611974
14	+99	4	1296.7	1559.0	.489090	3.1041E+03	2.096294
15	+110	2	236.3	282.3	.196240	6.8055E+02	.697448
16	+110	2	236.3	293.7	.205650	8.7499E+02	.645405
17	+110	3	659.2	780.9	.382250	1.5812E+03	1.568371
18	+110	4	1295.3	1428.0	.353640	1.6747E+03	2.178642
19	+110	5	2141.3	2265.0	.233110	1.7617E+03	2.010095
20	+110	5	2141.3	2265.0	.257690	1.7223E+03	2.271701
21	+125	2	235.9	264.8	.125760	4.2293E+02	.592707
22	+125	4	1293.4	1363.7	.141520	1.0728E+03	1.199551
23	+125	5	2138.1	2201.0	.101770	1.1111E+03	1.287163
24	+125	6	3194.7	3239.0	.088920	1.0481E+03	1.710962
25	+148	2	235.4	253.6	.059940	2.7421E+02	.384670
26	+148	3	657.5	705.1	.027980	7.2214E+02	.187492
27	+148	4	1290.4	1322.1	.041900	6.0391E+02	.579515
28	+148	5	2133.1	2154.2	.029200	6.1027E+02	.634632
29	+148	6	3187.2	3216.8	.021330	8.9260E+02	.473802
30	+148	6	3187.2	3193.1	.009170	6.0377E+02	.295045

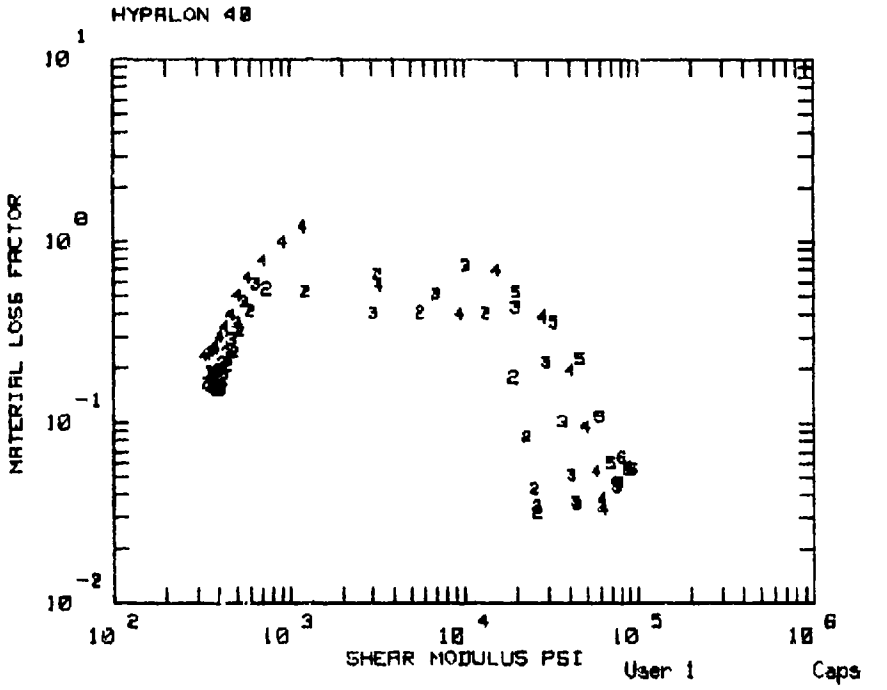

HYPALON 40
TEMPERATURE DEG F (DELTA-25)
120
70
20
MODULUS
LOSS FACTOR
SHEAR MODULUS psi
FREQUENCY HERTZ
REDUCED FREQUENCY HERTZ
10^{3}
10^{2}
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{5}
10^{4}
10^{3}
10^{2}
10^{1}
10^{0}
10^{2} 10^{3} 10^{4} 10^{5} 10^{6} 10^{7} 10^{8} 10^{9} 10^{10} 10^{11} 10^{12} 10^{13}


HYPALON 40
FREQUENCY Hz
TEMPERATURE ° F.
User 1
Caps


HYPALON 40
SHEAR MODULUS PSI
TEMPERATURE ° F.
User 1
Caps


HYPALON 48
SYSTEM LOSS FACTOR
10^0
10^-1
10^-2
10^-3
-50 -25 0 25 50 75 100 125 150 175 200
TEMPERATURE ° F.
User 1
Caps


HYPALON 48
MATERIAL LOSS FACTOR
10^1
10^0
10^-1
10^-2
-50 -25 0 25 50 75 100 125 150 175 200
TEMPERATURE ° F.
User 1
Caps



MATERIAL CODE: ED0507
MATERIAL: HYPALON 40

UNITS ARE ENGLISH

LOG(M)=LOG(ML)+(2LOG(MROM/ML))/(1+(FQROM/FR)^SLOPE)

TZERO	FQROM	MROM	SLOPE	ML
200.0	1.165E+08	4.816E+03	0.492	3.444E+02

LOG(ETA)=LOG(ETFROL)+((SH+SL)A+(SL-SH)(1-SQR(1+A^2)))C/2

TZERO	ETFROL	SL	SH	FROL	C
200.0	.822	.215	-.370	6.510E+07	.550

LOG(FR)=LOG(F)-12(T-T0)/(525+T-T0)
A=(LOG(FR)-LOG(FROL))/C

MATERIAL CODE: ED0507
MATERIAL: HYPALON
MANUFACTURER: UDRI
REMARKS: HYPALON 40
DATE: 9 May 1988
ENTERED BY: SEO
BEAM MATERIAL: STAINLESS STEEL
BEAM NUMBER: AL-080-E & AL-080-G
BEAM TYPE: SANDWICH BEAM
BEAM LENGTH: 7 in
BEAM THICKNESS: .08 in
BEAM DENSITY: .1 lb/cu in
DAMPING MATERIAL THICKNESS: .02108 in
DAMPING MATERIAL DENSITY: .05455 lb/cu in

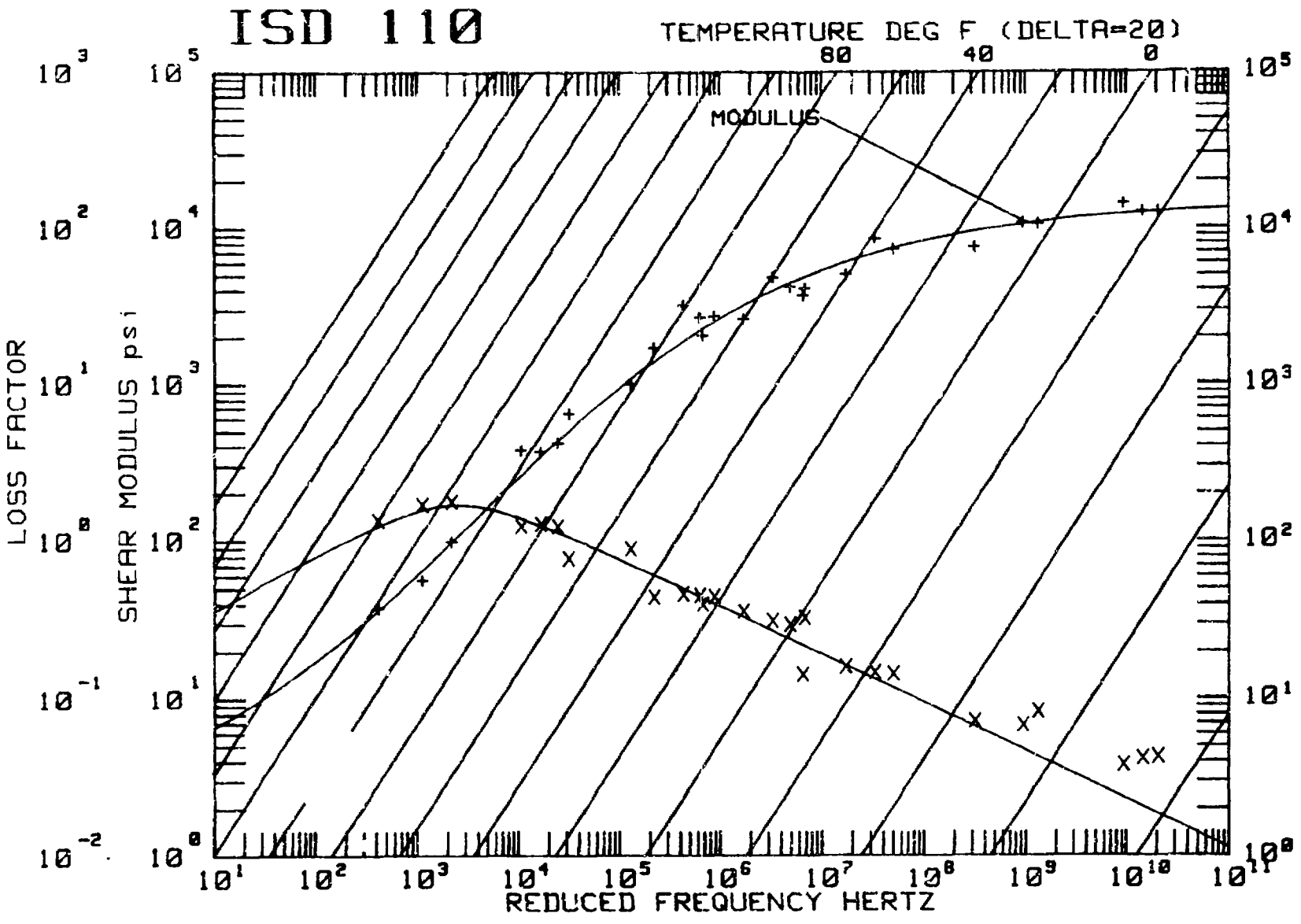
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	SHEAR MODULUS PSI	MATERIAL LOSS FACTOR
1	-24	2	329.7	724.2	.003316	2.6358E+04	.031862
2	-24	3	923.6	1963.0	.005574	4.4402E+04	.035537
3	-24	4	1795.1	3716.5	.006502	6.3473E+04	.033319
4	-24	5	2964.1	5942.4	.011184	7.7664E+04	.047114
5	-24	6	4427.1	8630.3	.015068	9.3145E+04	.055780
6	-16	3	922.5	1959.2	.005777	4.3862E+04	.036559
7	-15	2	329.3	723.0	.003608	2.6162E+04	.034529
8	-15	4	1792.7	3705.8	.007484	6.2315E+04	.037943
9	-15	5	2960.0	5917.8	.010811	7.5686E+04	.044894
10	-15	6	4420.2	8562.1	.015630	8.8634E+04	.056409
11	-5	2	328.7	720.7	.004646	2.5258E+04	.043303
12	-5	3	921.0	1947.6	.008495	4.1401E+04	.051645
13	-5	4	1790.0	3672.9	.011156	5.7667E+04	.053806
14	-5	5	2955.5	5856.1	.014951	7.0107E+04	.059456
15	-4	6	4411.8	8439.8	.018898	8.0816E+04	.065141
16	+5	3	919.6	1926.3	.018372	3.6708E+04	.103035
17	+5	4	1787.3	3613.7	.021846	4.9968E+04	.096498
18	+5	5	2950.9	5738.8	.029708	6.0291E+04	.109130
19	+6	2	328.2	716.0	.009687	2.2992E+04	.084090
20	+16	2	327.7	708.5	.023340	1.9408E+04	.180528
21	+16	3	918.1	1890.7	.043593	2.9818E+04	.217088
22	+16	4	1784.4	3525.2	.049335	4.0358E+04	.194996
23	+16	5	2945.9	5536.9	.068630	4.6506E+04	.225747
24	+25	3	916.3	1820.0	.104030	1.9809E+04	.433352
25	+25	4	1781.9	3377.9	.112249	2.8185E+04	.387850
26	+25	5	2941.8	5257.4	.121833	3.3050E+04	.359306
27	+26	2	327.1	692.9	.063742	1.3266E+04	.402982
28	+35	2	326.7	628.5	.111230	5.6923E+03	.405610
29	+35	3	915.6	1681.9	.217280	1.0223E+04	.742853
30	+35	4	1779.3	3100.6	.228746	1.5344E+04	.691002
31	+36	5	2936.8	4811.8	.196342	2.0005E+04	.525637
32	+45	2	326.1	582.3	.211045	3.2443E+03	.662477

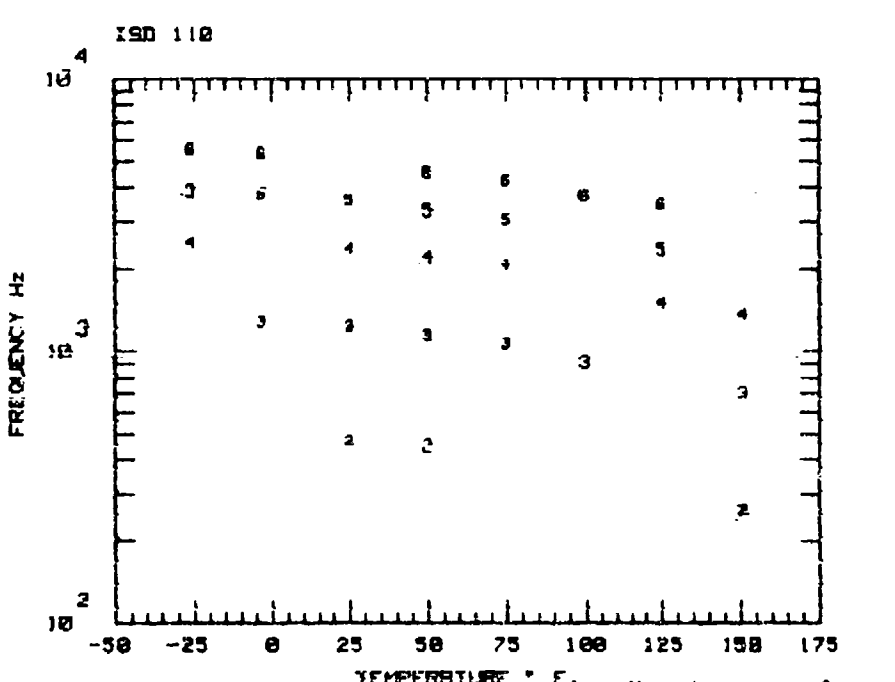
MATERIAL CODE: ED0507
MATERIAL: HYPALON 40
MANUFACTURER: UDRI
REMARKS: HYPALON 40
DATE: 9 May 1988
ENTERED BY: SEO
BEAM MATERIAL: STAINLESS STEEL
BEAM NUMBER: AL-080-E & AL-080-G
BEAM TYPE: SANDWICH BEAM
BEAM LENGTH: 7 in
BEAM THICKNESS: .08 in
BEAM DENSITY: .1 lb/cu in
DAMPING MATERIAL THICKNESS: .02108 in
DAMPING MATERIAL DENSITY: .05455 lb/cu in

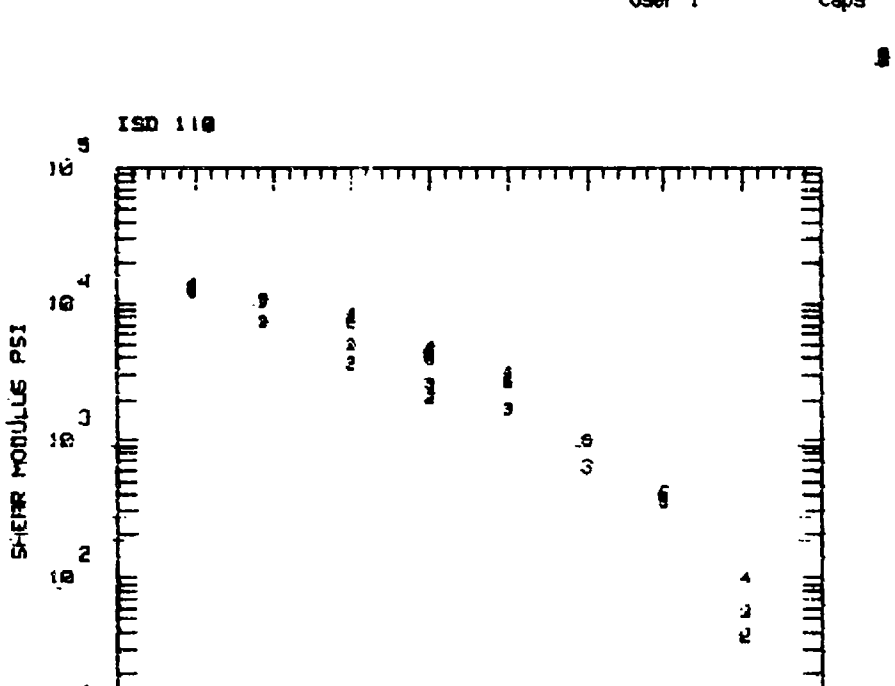
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	SHEAR MODULUS PSI	MATERIAL LOSS FACTOR
33	+45	3	914.2	1530.2	.188316	6.9858E+03	.514789
34	+46	4	1776.3	2741.6	.159066	9.4517E+03	.400112
35	+55	2	325.6	471.4	.206245	1.2543E+03	.528170
36	+56	4	1773.6	2223.0	.189739	3.2892E+03	.565581
37	+65	2	325.1	424.4	.196412	7.5577E+02	.545956
38	+66	3	911.4	1275.4	.156940	3.0646E+03	.405079
39	+66	4	1771.0	1940.6	.234649	1.2126E+03	1.204111
40	+75	2	324.6	405.2	.139686	6.0261E+02	.412824
41	+76	4	1768.3	1882.5	.160863	9.2291E+02	.991149
42	+85	2	324.1	394.9	.103087	5.2600E+02	.319808
43	+85	3	908.8	994.5	.119073	6.5431E+02	.583729
44	+86	4	1765.6	1839.8	.103983	7.0921E+02	.779830
45	+95	3	907.5	977.2	.085398	5.5923E+02	.464885
46	+95	4	1763.2	1815.1	.072389	5.8871E+02	.629223
47	+96	2	323.5	389.0	.076225	4.8510E+02	.244113
48	+105	2	323.0	384.8	.062954	4.5605E+02	.207045
49	+106	3	906.0	967.1	.060944	5.0773E+02	.354558
50	+106	4	1760.2	1798.6	.051705	5.1444E+02	.501399
51	+115	2	322.5	381.9	.052390	4.3718E+02	.175491
52	+116	3	904.6	960.2	.047267	4.7456E+02	.288354
53	+116	4	1757.6	1787.6	.037618	4.6883E+02	.393695
54	+125	3	903.4	954.9	.038436	4.5001E+02	.243510
55	+125	4	1755.1	1779.4	.030373	4.3681E+02	.337047
56	+126	2	322.0	379.5	.046106	4.2270E+02	.156724
57	+135	3	902.0	950.1	.032640	4.2888E+02	.214009
58	+135	4	1752.5	1771.9	.025408	4.1011E+02	.297050
59	+136	2	321.4	377.1	.044831	4.0809E+02	.154866
60	+145	2	321.0	374.6	.044136	3.9260E+02	.155313
61	+145	3	900.7	945.8	.029178	4.1048E+02	.197433
62	+145	4	1749.8	1765.0	.021161	3.8660E+02	.259842
63	+155	4	1747.1	1759.0	.019774	3.6773E+02	.253090
64	+156	2	320.4	372.2	.043824	3.7872E+02	.156881

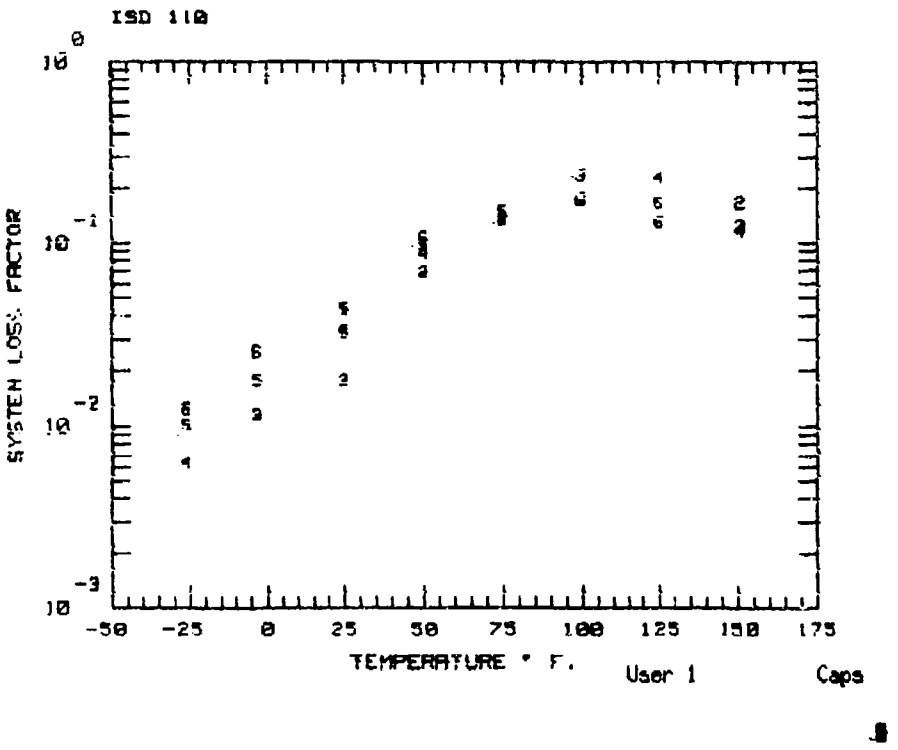
MATERIAL CODE: ED0507
MATERIAL: HYPALON 40
MANUFACTURER: UDRI
REMARKS: HYPALON 40
DATE: 9 May 1988
ENTERED BY: SEO
BEAM MATERIAL: STAINLESS STEEL
BEAM NUMBER: AL-080-E & AL-080-G
BEAM TYPE: SANDWICH BEAM
BEAM LENGTH: 7 in
BEAM THICKNESS: .08 in
BEAM DENSITY: .1 lb/cu in
DAMPING MATERIAL THICKNESS: .02108 in
DAMPING MATERIAL DENSITY: .05455 lb/cu in

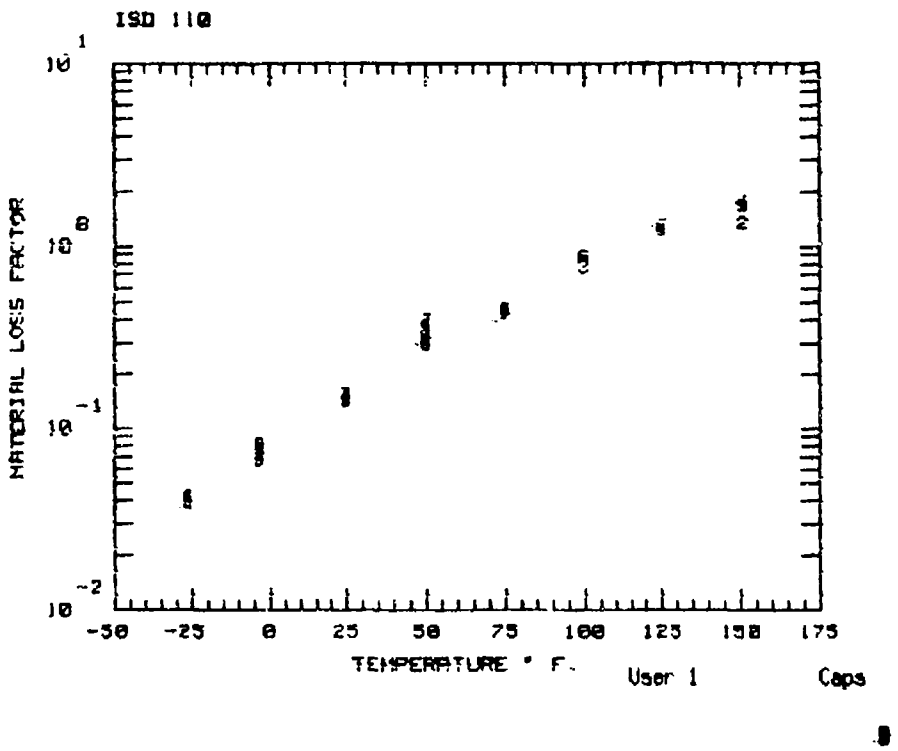
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	SHEAR MODULUS PSI	MATERIAL LOSS FACTOR
65	+156	3	899.2	941.6	.027317	3.9380E+02	.190418
66	+165	4	1744.4	1753.0	.017920	3.4885E+02	.239699
67	+167	3	897.7	937.2	.025853	3.7658E+02	.186175
68	+170	2	313.7	369.5	.044200	3.6354E+02	.161368
69	+175	4	1741.7	1747.0	.016605	3.3029E+02	.232578
70	+177	3	896.4	932.8	.025260	3.5826E+02	.188805
71	+179	2	319.2	366.5	.044694	3.4597E+02	.167432

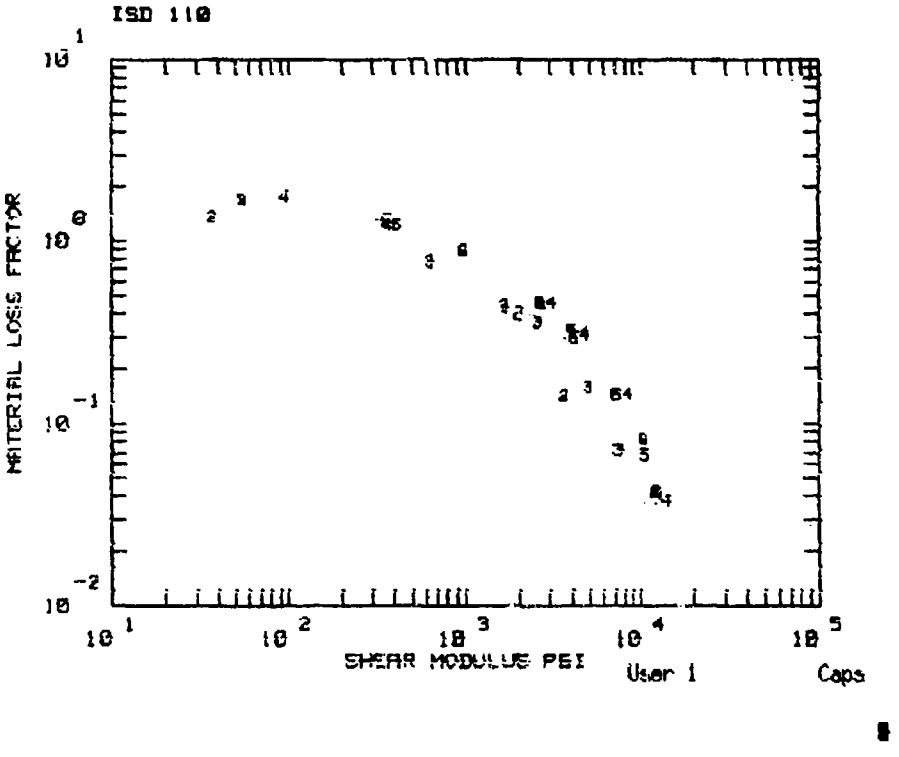

ISD 110
TEMPERATURE DEG F (DELTA=20)
80
40
0
MODULUS
LOSS FACTOR
SHEAR MODULUS psi
FREQUENCY HERTZ
REDUCED FREQUENCY HERTZ
10^{3}
10^{2}
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{5}
10^{4}
10^{3}
10^{2}
10^{1}
10^{0}
10^{1} 10^{2} 10^{3} 10^{4} 10^{5} 10^{6} 10^{7} 10^{8} 10^{9} 10^{10} 10^{11}


ISD 110
FREQUENCY Hz
TEMPERATURE ° F.
User 1
Caps


ISD 110
SHEAR MODULUS PSI
TEMPERATURE ° F.
User 1
Caps


ISD 110
SYSTEM LOSS FACTOR
TEMPERATURE ° F.
User 1
Caps


ISD 110
MATERIAL LOSS FACTOR
TEMPERATURE ° F.
User 1
Caps



MATERIAL CODE: ISD110
MATERIAL: 3M ISD-110

UNITS ARE ENGLISH
LOG(M)=LOG(ML)+(2LOG(MROM/ML))/(1+(FQROM/FR)^SLOPE)

TZERO	FQROM	MROM	SLOPE	ML
160.0	4.000E+03	1.450E+02	0.270	1.450E+00

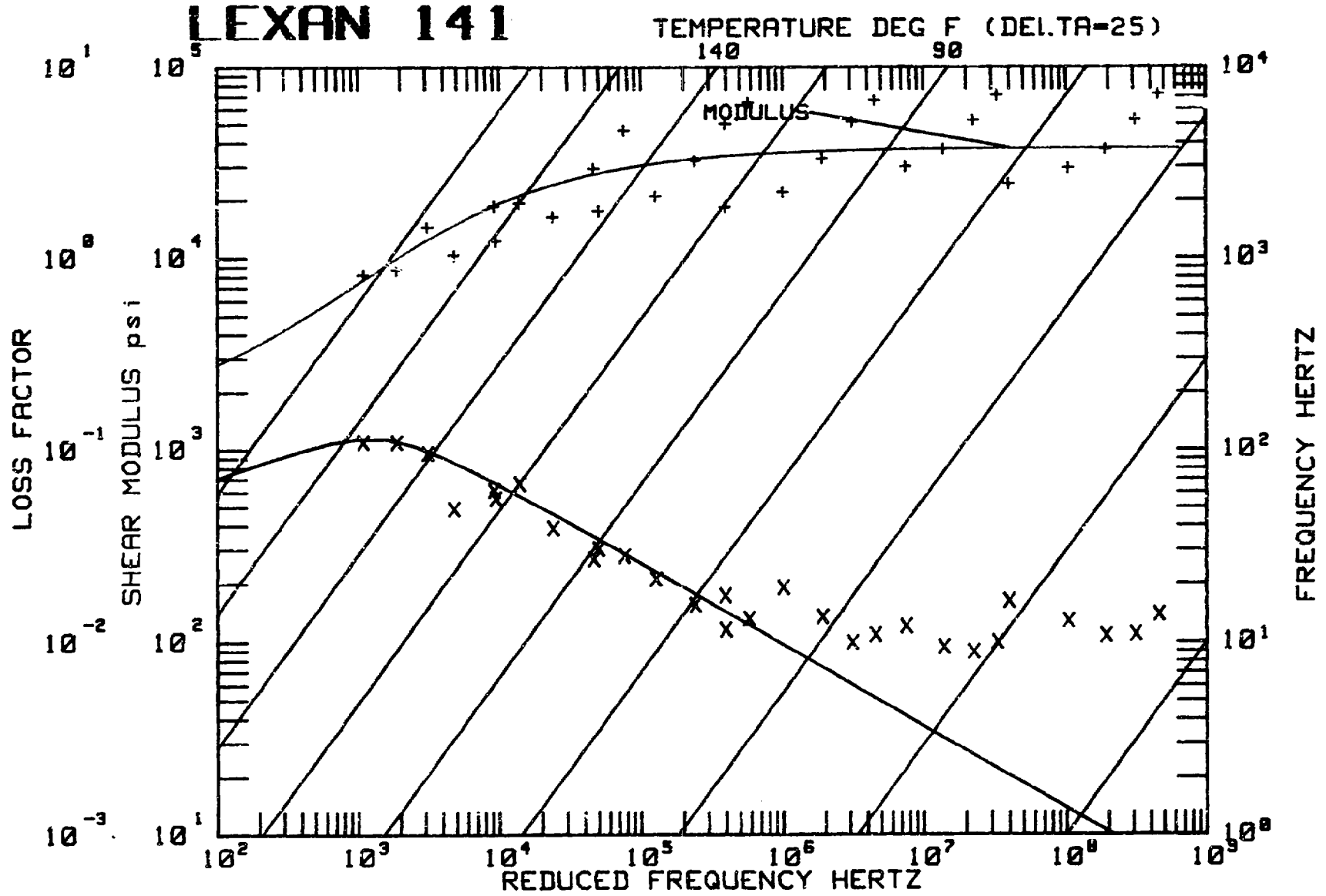
LOG(ETA)=LOG(ETFROL)+((SH+SL)A+(SL-SH)(1-SQR(1+A^2)))C/2

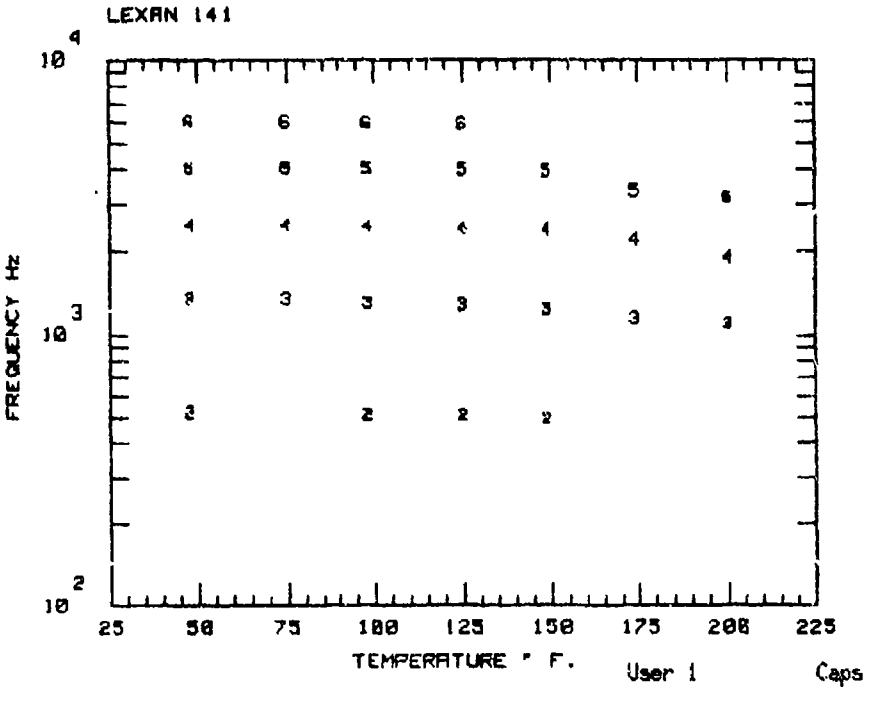
TZERO	ETFROL	SL	SH	FROL	C
160.0	1.700	.360	-.310	2.200E+03	.600

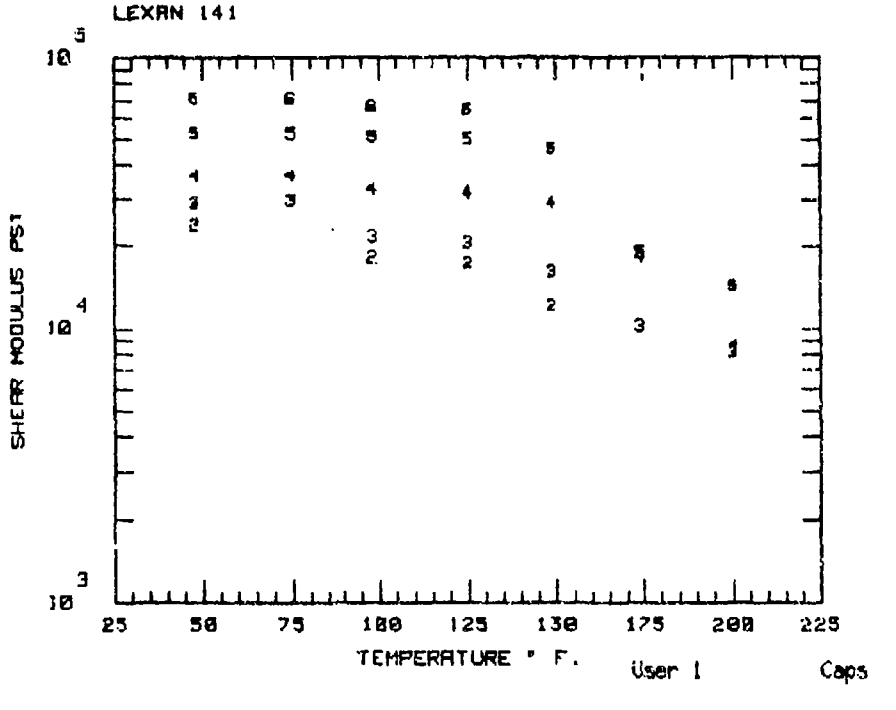
LOG(FR)=LOG(F)-12(T-T0)/(525+T-T0)
A=(LOG(FR)-LOG(FROL))/C

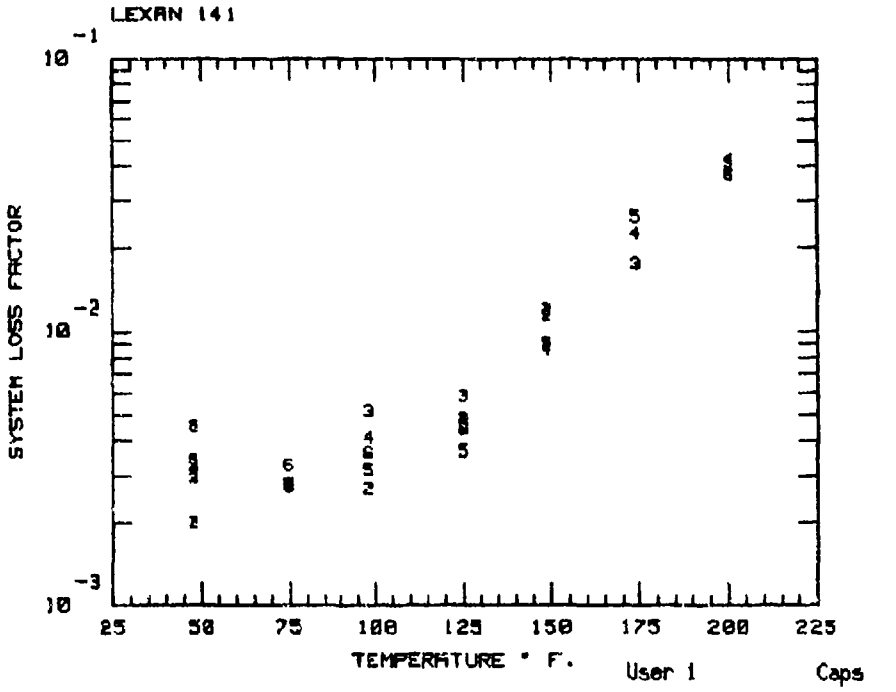
MATERIAL CODE: ISD110
MATERIAL: 3M ISD-110
MANUFACTURER: 3M
REMARKS: DATA FROM 25-NOV-85
DATE: 14 Apr 1987
ENTERED BY: GJF
BEAM MATERIAL: STAINLESS STEEL
BEAM NUMBER: SS-7-8 & SS-7-16
BEAM TYPE: SANDWICH BEAM
BEAM LENGTH: 7 in
BEAM THICKNESS: .0593 in
BEAM DENSITY: .283 lb/cu in
DAMPING MATERIAL THICKNESS: .002 in
DAMPING MATERIAL DENSITY: .035 lb/cu in

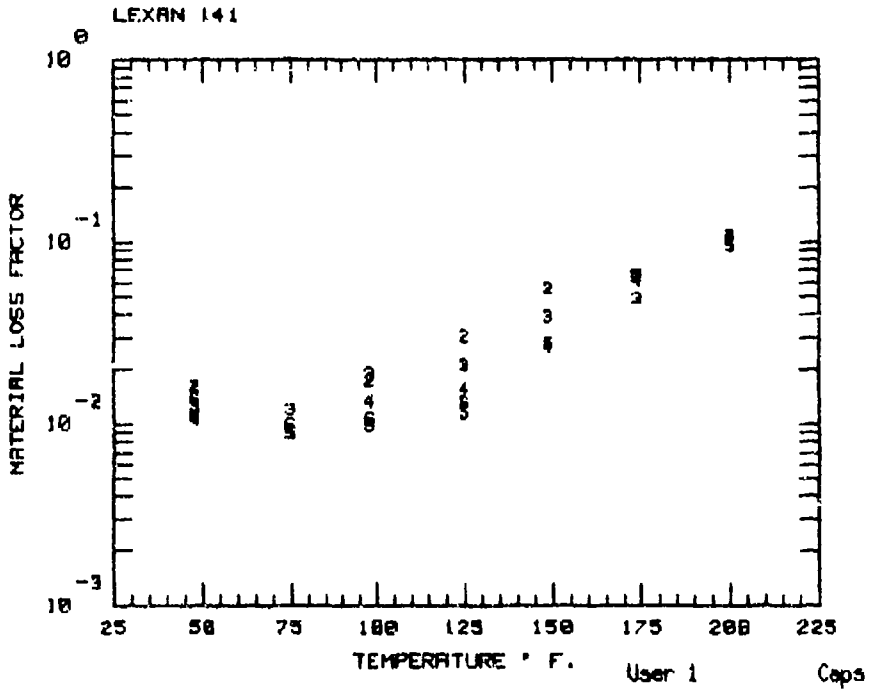
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	SHEAR MODULUS PSI	MATERIAL LOSS FACTOR
1	-26	4	1350.7	2506.4	.006300	1.4037E+04	.037664
2	-26	5	2229.0	3880.0	.010100	1.2410E+04	.041300
3	-26	6	3338.7	5499.0	.012400	1.2391E+04	.042298
4	-3	3	687.0	1278.8	.011600	7.3693E+03	.071256
5	-3	5	2222.8	3793.0	.017700	1.0538E+04	.067104
6	-3	6	3328.3	5345.0	.025400	1.0391E+04	.082055
7	+25	2	243.7	465.2	.017700	3.6406E+03	.141387
8	+25	3	684.2	1230.7	.032700	4.9808E+03	.158138
9	+25	4	1341.3	2372.0	.033000	8.3841E+03	.145627
10	+25	5	2215.3	3585.8	.043300	7.1753E+03	.142595
11	+50	2	242.8	446.7	.068900	2.0262E+03	.395949
12	+50	3	681.7	1139.0	.097500	2.5812E+03	.355877
13	+50	4	1336.7	2208.0	.087900	4.7585E+03	.308901
14	+50	5	2208.6	3283.0	.097800	4.1387E+03	.292756
15	+50	6	3304.3	4558.0	.107900	4.0309E+03	.322943
16	+75	3	679.2	1068.0	.134800	1.6917E+03	.438455
17	+75	4	1332.2	2079.0	.141900	3.1542E+03	.458191
18	+75	5	2201.9	3048.0	.147600	2.6551E+03	.449161
19	+75	6	3293.0	4261.0	.136100	2.6830E+03	.440631
20	+100	3	676.6	909.6	.234100	6.3464E+02	.771139
21	+100	6	3281.7	3730.0	.171600	9.8336E+02	.881166
22	+125	4	1323.0	1503.0	.228200	3.7196E+02	1.233300
23	+125	5	2188.6	2368.0	.164700	3.6322E+02	1.270201
24	+125	6	3270.4	3475.0	.129500	4.1589E+02	1.228026
25	+151	2	238.3	258.0	.166300	3.7249E+01	1.339243
26	+151	3	671.5	700.0	.124600	5.5782E+01	1.680471
27	+151	4	1318.2	1368.0	.117600	8.7572E+01	1.756692

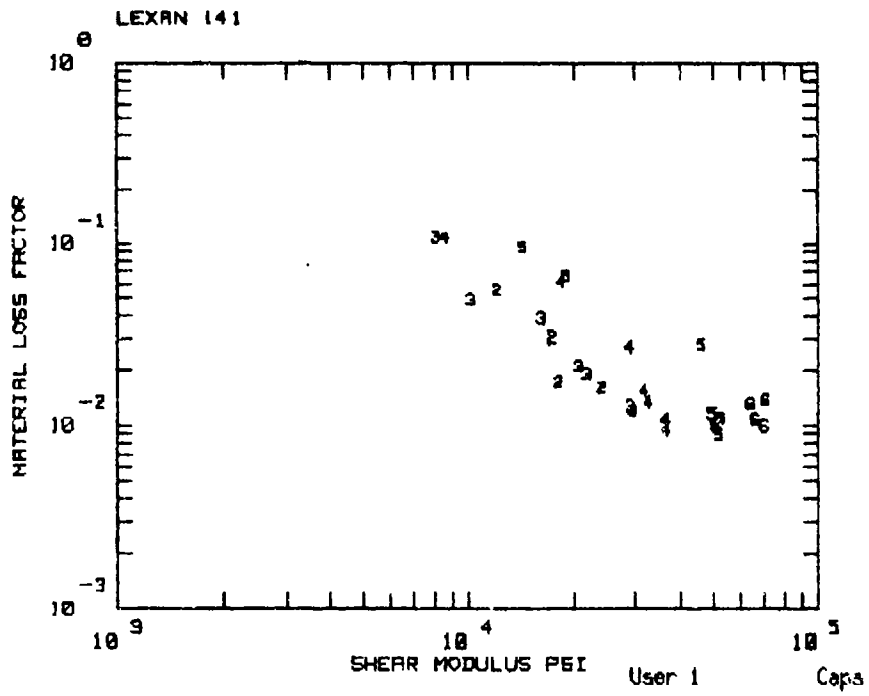

LEXAN 141
TEMPERATURE DEG F (DELTA=25)
140
90
MODULUS
LOSS FACTOR
SHEAR MODULUS psi
FREQUENCY HERTZ
REDUCED FREQUENCY HERTZ
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{5}
10^{4}
10^{3}
10^{2}
10^{1}
10^{4}
10^{3}
10^{2}
10^{1}
10^{0}
10^{2}
10^{3}
10^{4}
10^{5}
10^{6}
10^{7}
10^{8}
10^{9}


LEXAN 141
FREQUENCY Hz
10^4
10^3
10^2
25 50 75 100 125 150 175 200 225
TEMPERATURE ° F.
User 1
Caps


LEXAN 141
SHEAR MODULUS PSI
10^5
10^4
10^3
25 50 75 100 125 150 175 200 225
TEMPERATURE ° F.
User 1
Caps


LEXAN 141
SYSTEM LOSS FACTOR
10^-1
10^-2
10^-3
25
50
75
100
125
150
175
200
225
TEMPERATURE ° F.
User 1
Caps


LEXAN 141
MATERIAL LOSS FACTOR
10^0
10^-1
10^-2
10^-3
25
50
75
100
125
150
175
200
225
TEMPERATURE ° F.
User 1
Caps



MATERIAL CODE: ED0495
MATERIAL: LEXAN 141

UNITS ARE ENGLISH
LOG(M)=LOG(ML)+(2LOG(MROM/ML))/(1+(FQROM/FR)^SLOPE)

TZERO	FQROM	MROM	SLOPE	ML
200.0	9.227E+02	7.144E+03	0.576	1.354E+03

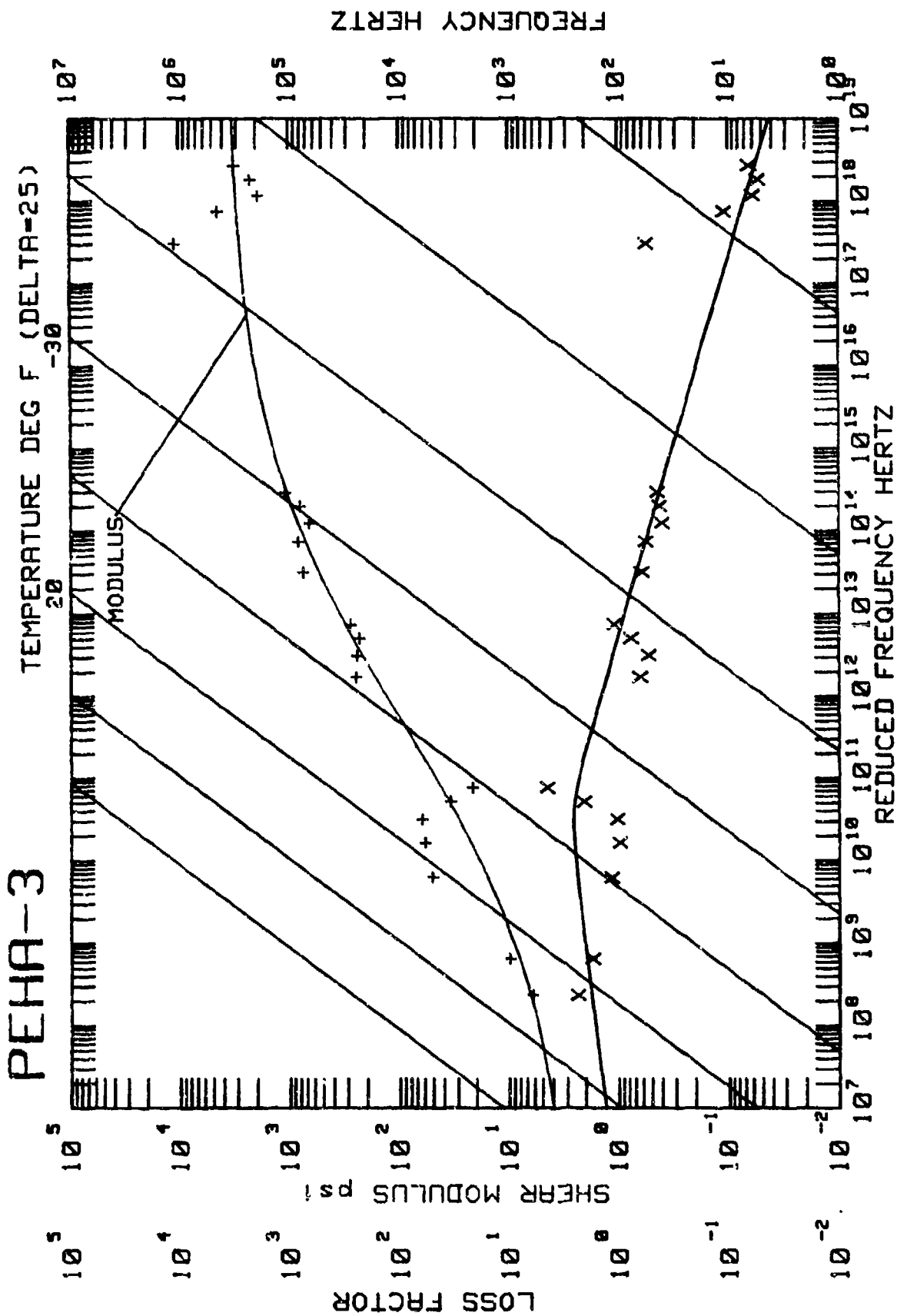
LOG(ETA)=LOG(ETFROL)+((SH+SL)A+(SL-SH)(1-SQR(1+A^2)))C/2

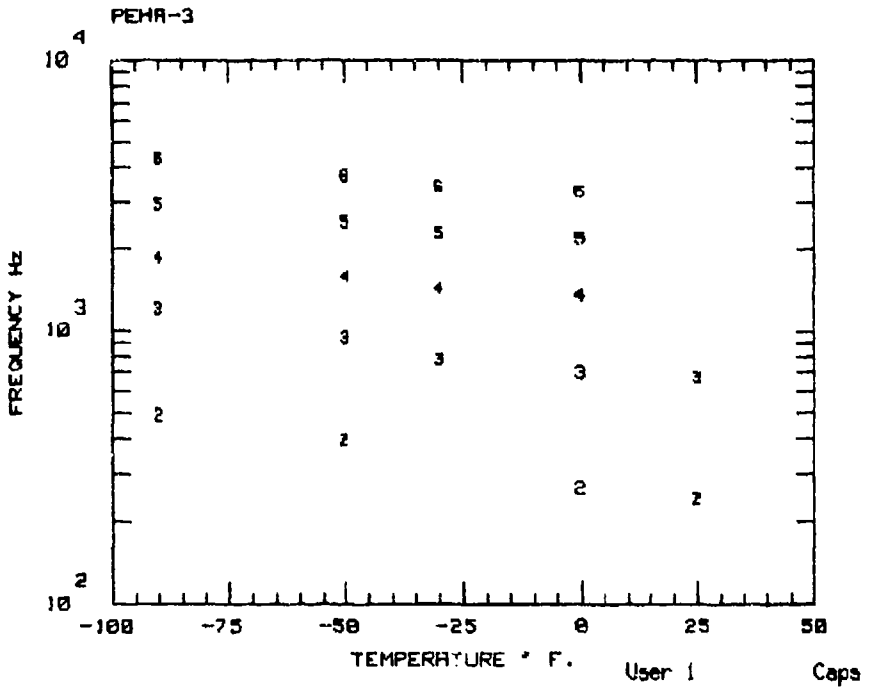
TZERO	ETFROL	SL	SH	FROL	C
200.0	.115	.280	-.425	1.466E+03	.400

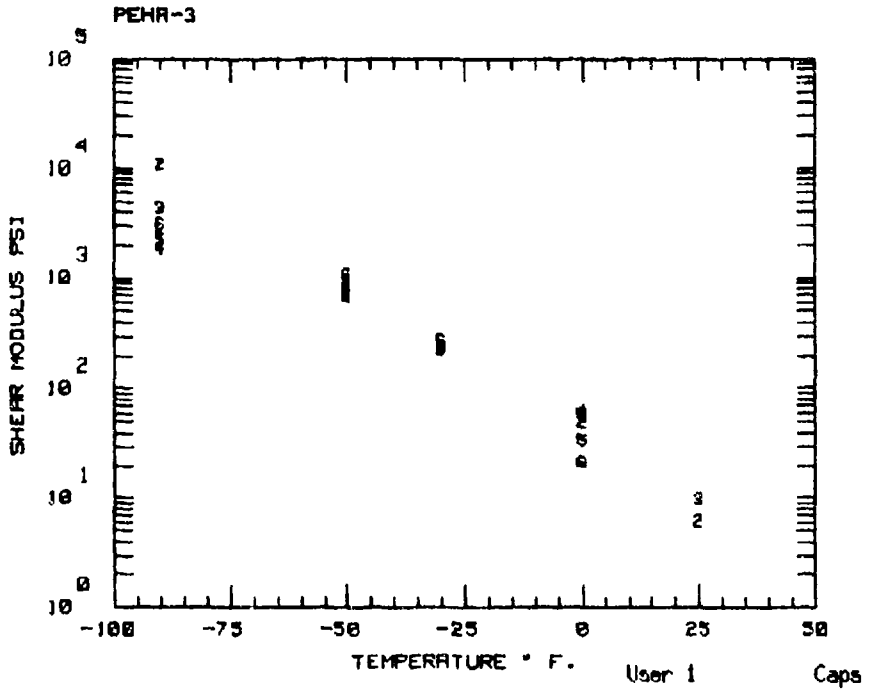
LOG(FR)=LOG(F)-12(T-T0)/(525+T-T0)
A=(LOG(FR)-LOG(FROL))/C

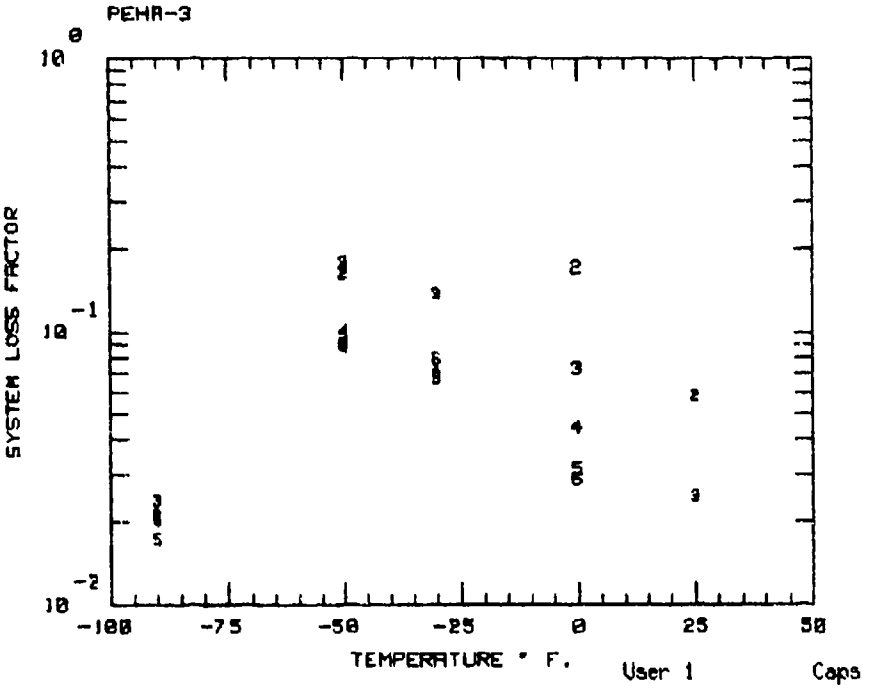
MATERIAL CODE: ED0495
MATERIAL: LEXAN 141
MANUFACTURER: GE
REMARKS: BEAM SPLIT AT 215 F
DATE: 29 Apr 1988
ENTERED BY: SEO
BEAM MATERIAL: STAINLESS STEEL
BEAM NUMBER: SS-7-105 & SS-7-125
BEAM TYPE: SANDWICH BEAM
BEAM LENGTH: 7 in
BEAM THICKNESS: .06029 in
BEAM DENSITY: .283 lb/cu in
DAMPING MATERIAL THICKNESS: .0121 in
DAMPING MATERIAL DENSITY: .043356 lb/cu in

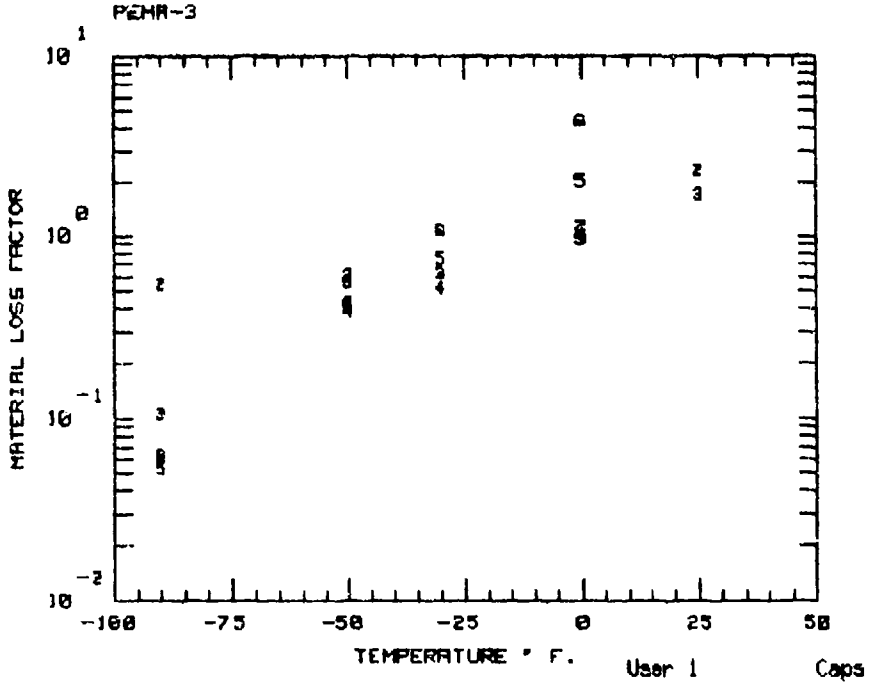
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	SHEAR MODULUS PSI	MATERIAL LOSS FACTOR
1	+75	3	678.5	1350.8	.002709	2.9622E+04	.011984
2	+75	4	1332.9	2498.5	.002742	3.6665E+04	.009377
3	+75	5	2209.6	4043.9	.002779	5.2058E+04	.008849
4	+75	6	3304.5	5948.3	.003245	7.0420E+04	.009908
5	+48	2	242.7	518.4	.002020	2.4028E+04	.016140
6	+48	3	680.3	1350.5	.002930	2.9034E+04	.012760
7	+48	4	1336.3	2501.4	.003150	3.6502E+04	.010723
8	+48	5	2216.0	4055.4	.003420	5.2344E+04	.010889
9	+48	6	3313.9	5970.0	.004510	7.1162E+04	.013797
10	+98	2	241.7	506.6	.002670	1.8128E+04	.017227
11	+98	3	677.0	1298.2	.005120	2.1787E+04	.019006
12	+98	4	1330.0	2452.6	.004120	3.2734E+04	.013399
13	+98	5	2204.2	4023.3	.003120	5.0938E+04	.009864
14	+98	6	3296.5	5878.0	.003620	6.6187E+04	.010819
15	+125	2	241.2	504.0	.004800	1.7388E+04	.030127
16	+125	3	675.2	1287.0	.005800	2.0739E+04	.021038
17	+125	4	1326.6	2437.2	.004810	3.1790E+04	.015479
18	+125	5	2197.8	4001.3	.003670	4.9824E+04	.011525
19	+125	6	3287.1	5841.0	.004430	6.4468E+04	.013142
20	+149	2	240.7	487.0	.011330	1.2121E+04	.055316
21	+149	3	673.6	1239.4	.011940	1.6205E+04	.038596
22	+149	4	1323.5	2398.0	.008590	2.8973E+04	.026651
23	+149	5	2192.1	3946.0	.009060	4.6192E+04	.027669
24	+174	3	671.9	1144.8	.017650	1.0225E+04	.048620
25	+174	4	1320.4	2212.0	.022600	1.8374E+04	.060892
26	+174	5	2186.2	3346.0	.026010	1.9079E+04	.066012
27	+200	3	670.2	1096.0	.041420	8.1347E+03	.108973
28	+200	4	1317.1	1907.0	.042480	8.6262E+03	.108654
29	+200	5	2180.1	3159.0	.037330	1.4363E+04	.095401

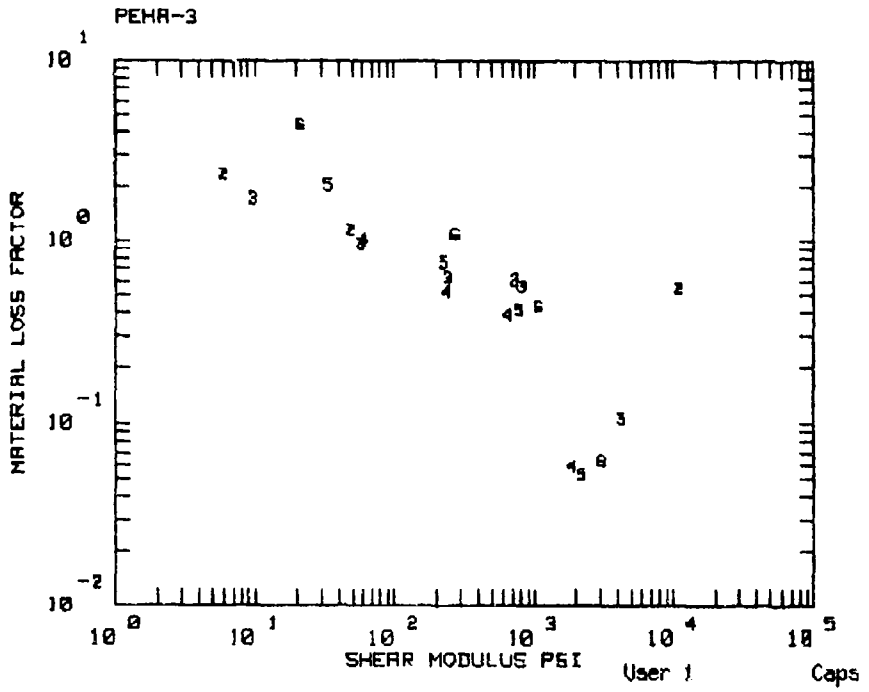

PEHA-3
TEMPERATURE DEG F (DELTA=25)
-30
20
MODULUS
FREQUENCY HERTZ
REDUCED FREQUENCY HERTZ
SHEAR MODULUS psi
LOSS FACTOR


PEHR-3
FREQUENCY Hz
TEMPERATURE ° F.
User 1
Caps


PEHR-3
SHEAR MODULUS PSI
TEMPERATURE ° F.
User 1
Caps


PEHR-3
SYSTEM LOSS FACTOR
TEMPERATURE ° F.
User 1
Caps


PEHR-3
MATERIAL LOSS FACTOR
TEMPERATURE ° F.
User 1
Caps



MATERIAL CODE: ED0490
MATERIAL: PEHA-3

UNITS ARE ENGLISH
LOG(M)=LOG(ML)+(2LOG(MROM/ML))/(1+(FQROM/FR)^SLOPE)

TZERO	FQROM	MROM	SLOPE	ML
200.0	4.871E+11	9.548E+01	0.246	2.466E+00

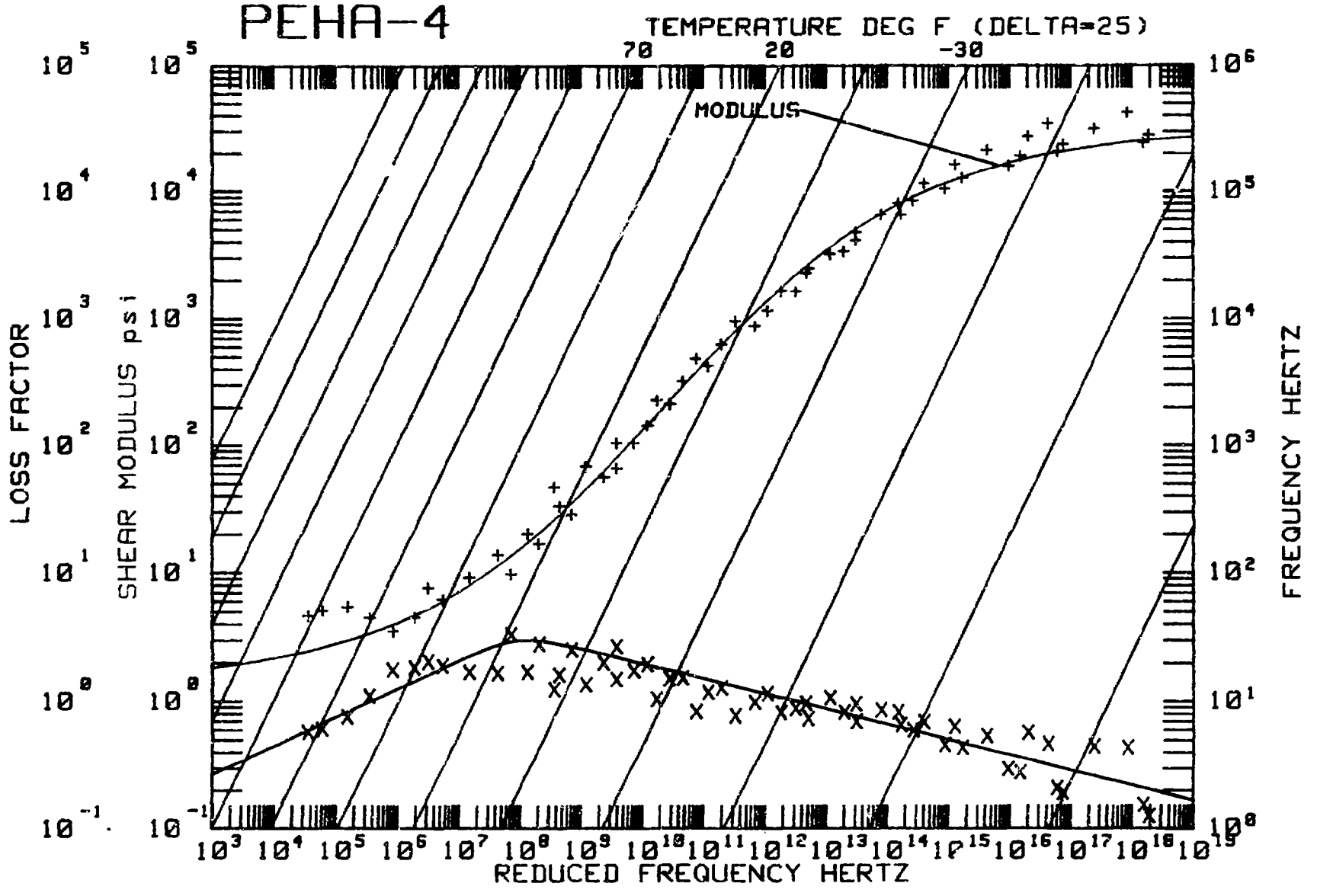
LOG(ETA)=LOG(ETFROL)+((SH+SL)A+(SL-SH)(1-SQR(1+A^2)))C/2

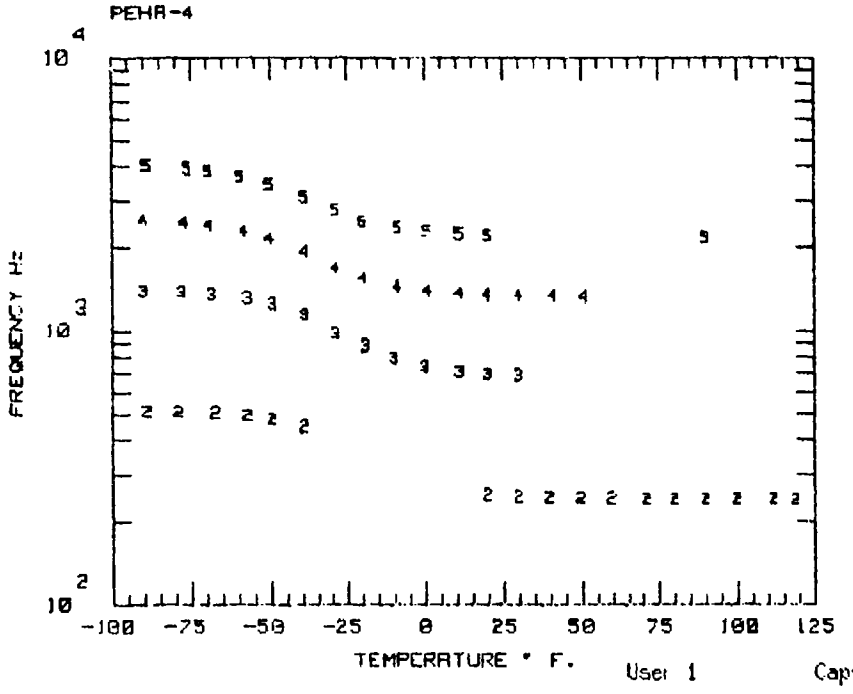
TZERO	ETFROL	SL	SH	FROL	C
200.0	2.596	.095	-.220	4.160E+10	.350

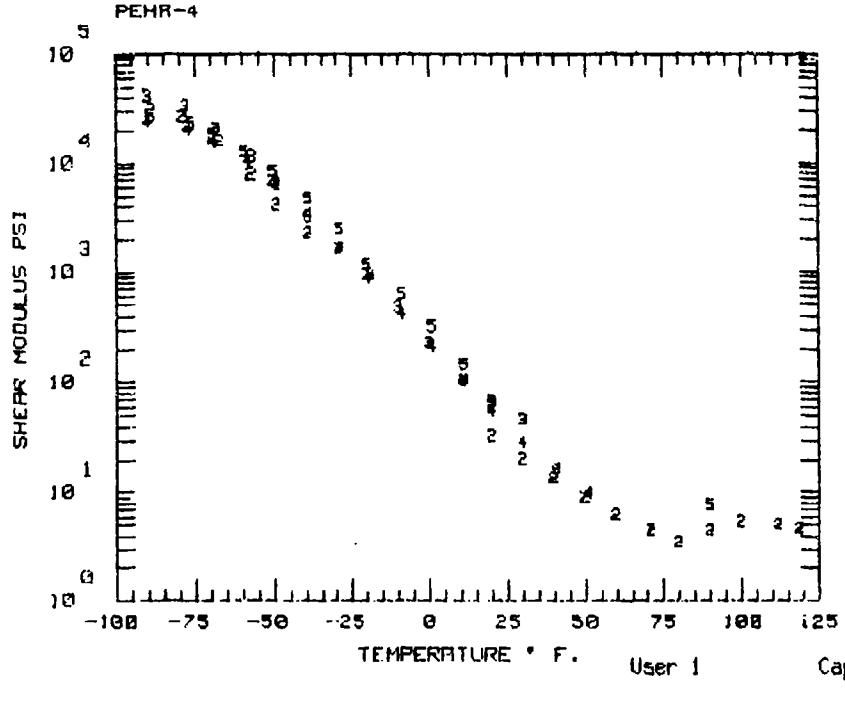
LOG(FR)=LOG(F)-12(T-T0)/(525+T-T0)
A=(LOG(FR)-LOG(FROL))/C

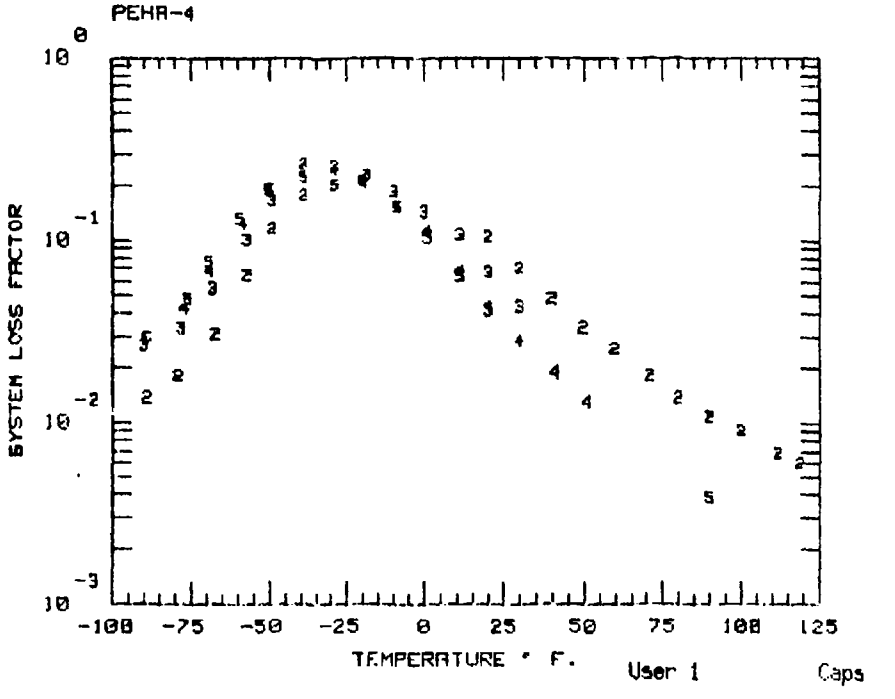
MATERIAL CODE: ED0490
MATERIAL: PEHA-3
MANUFACTURER: MONSANTO
REMARKS: PEHA-3
DATE: 28 Apr 1988
ENTERED BY: SEO
BEAM MATERIAL: STAINLESS STEEL
BEAM NUMBER: SS-7-35 & SS-7-37
BEAM TYPE: SANDWICH BEAM
BEAM LENGTH: 7 in
BEAM THICKNESS: .05896 in
BEAM DENSITY: .283 lb/cu in
DAMPING MATERIAL THICKNESS: .002 in
DAMPING MATERIAL DENSITY: .0376 lb/cu in

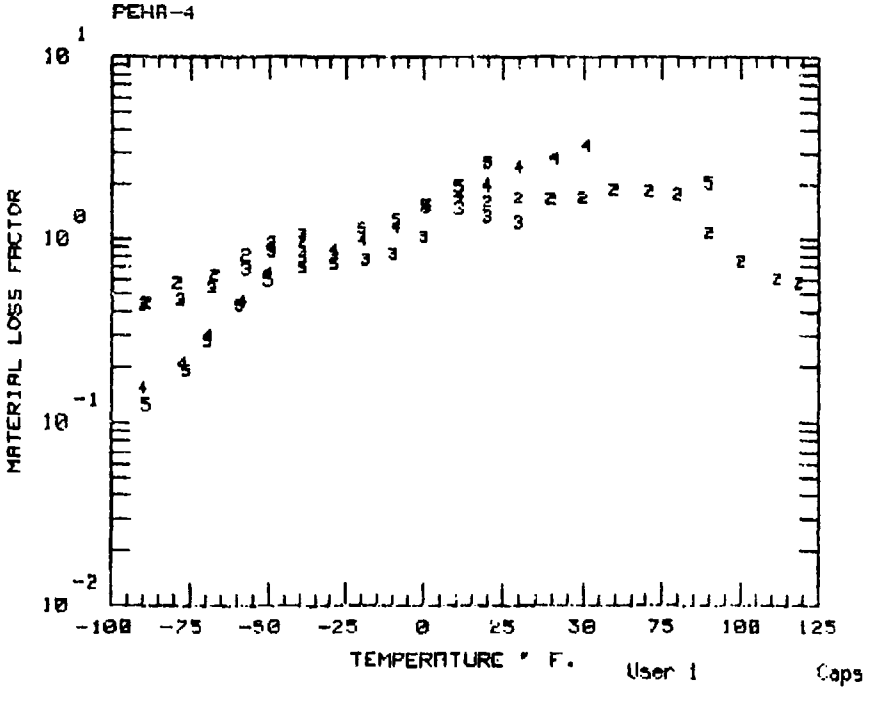
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	SHEAR MODULUS PSI	MATERIAL LOSS FACTOR
1	-90	2	241.8	485.5	.021090	1.0880E+04	.543745
2	-90	3	676.4	1199.7	.023750	4.3413E+03	.106121
3	-90	4	1331.1	1872.0	.020190	1.8657E+03	.058777
4	-90	5	2208.0	2929.0	.017310	2.1995E+03	.052497
5	-90	6	3297.2	4325.6	.020410	3.0730E+03	.062792
6	-50	2	241.0	396.2	.164060	7.3662E+02	.603574
7	-50	3	673.9	939.5	.179880	8.2080E+02	.556659
8	-50	4	1326.0	1587.0	.100190	6.4678E+02	.388759
9	-50	5	2199.2	2532.0	.090050	7.8395E+02	.411905
10	-50	6	3284.5	3744.0	.089480	1.0690E+03	.432269
11	-30	3	672.7	778.8	.138030	2.4406E+02	.626493
12	-30	4	1323.5	1433.0	.072220	2.3793E+02	.519914
13	-30	5	2194.8	2303.0	.067170	2.2802E+02	.752640
14	-30	6	3278.1	3410.0	.079470	2.7364E+02	1.077589
15	+0	2	239.8	263.7	.172930	4.9300E+01	1.139100
16	+0	3	670.8	698.8	.073410	5.7751E+01	.958705
17	+0	4	1319.6	1349.0	.044480	6.1386E+01	1.013371
18	+0	5	2188.2	2203.0	.031090	3.3760E+01	2.037310
19	+0	6	3268.5	3276.0	.028690	2.1244E+01	4.405995
20	+25	2	239.3	242.2	.057800	6.0618E+00	2.327967
21	+25	3	669.3	673.5	.024790	9.7186E+00	1.707605

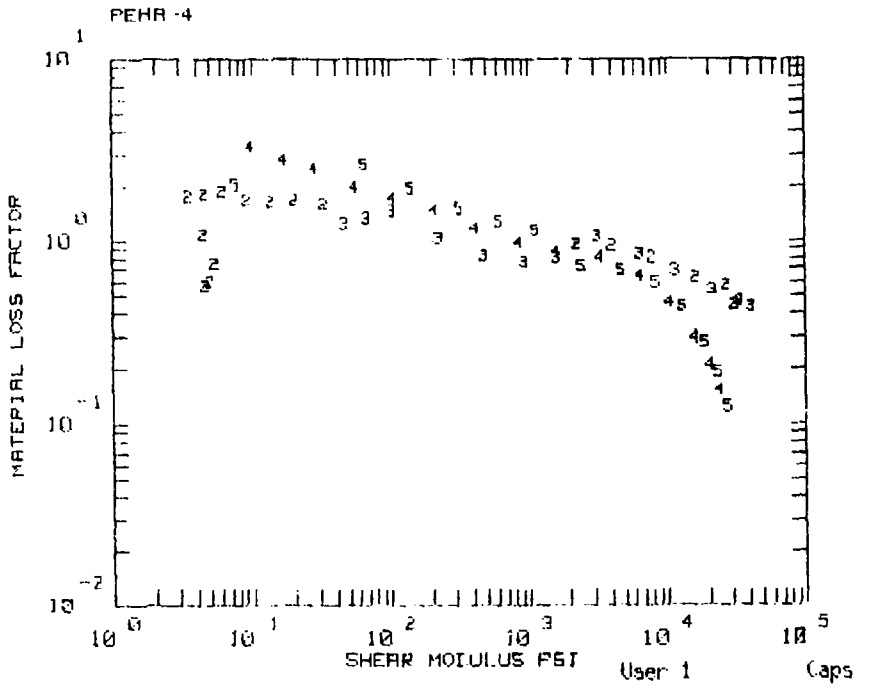

PEHA-4
TEMPERATURE DEG F (DELTA=25)
70
20
-30
MODULUS
LOSS FACTOR
SHEAR MODULUS psi
FREQUENCY HERTZ
REDUCED FREQUENCY HERTZ


PEHR-4
FREQUENCY Hz
TEMPERATURE ° F.
User 1
Caps


PEHR-4
SHEAR MODULUS PSI
TEMPERATURE ° F.
User 1
Caps


PEHR-4
SYSTEM LOSS FACTOR
10^0
10^-1
10^-2
10^-3
-100 -75 -50 -25 0 25 50 75 100 125
TEMPERATURE ° F.
User 1
Caps


PEHR-4
MATERIAL LOSS FACTOR
10^1
10^0
10^-1
10^-2
-100 -75 -50 -25 0 25 50 75 100 125
TEMPERATURE ° F.
User 1
Caps



MATERIAL CODE: ED0436
MATERIAL: M880221E-4

UNITS ARE ENGLISH
LOG(M)=LOG(ML)+ 2LOG(MROM/ML))/(1+(FQROM/FR)^SLOPE)

TZERO	FQROM	MROM	SLOPE	ML
200.0	2.507E+10	2.128E+02	0.210	1.422E+00

LOG(ETA)=LOG(ETFROL)+((SH+SL)A+(SL-SH)(1-SQR(1+A^2)))C/2

TZERO	ETFROL	SL	SH	FROL	C
200.0	3.020	.225	-.120	9.190E+07	.400

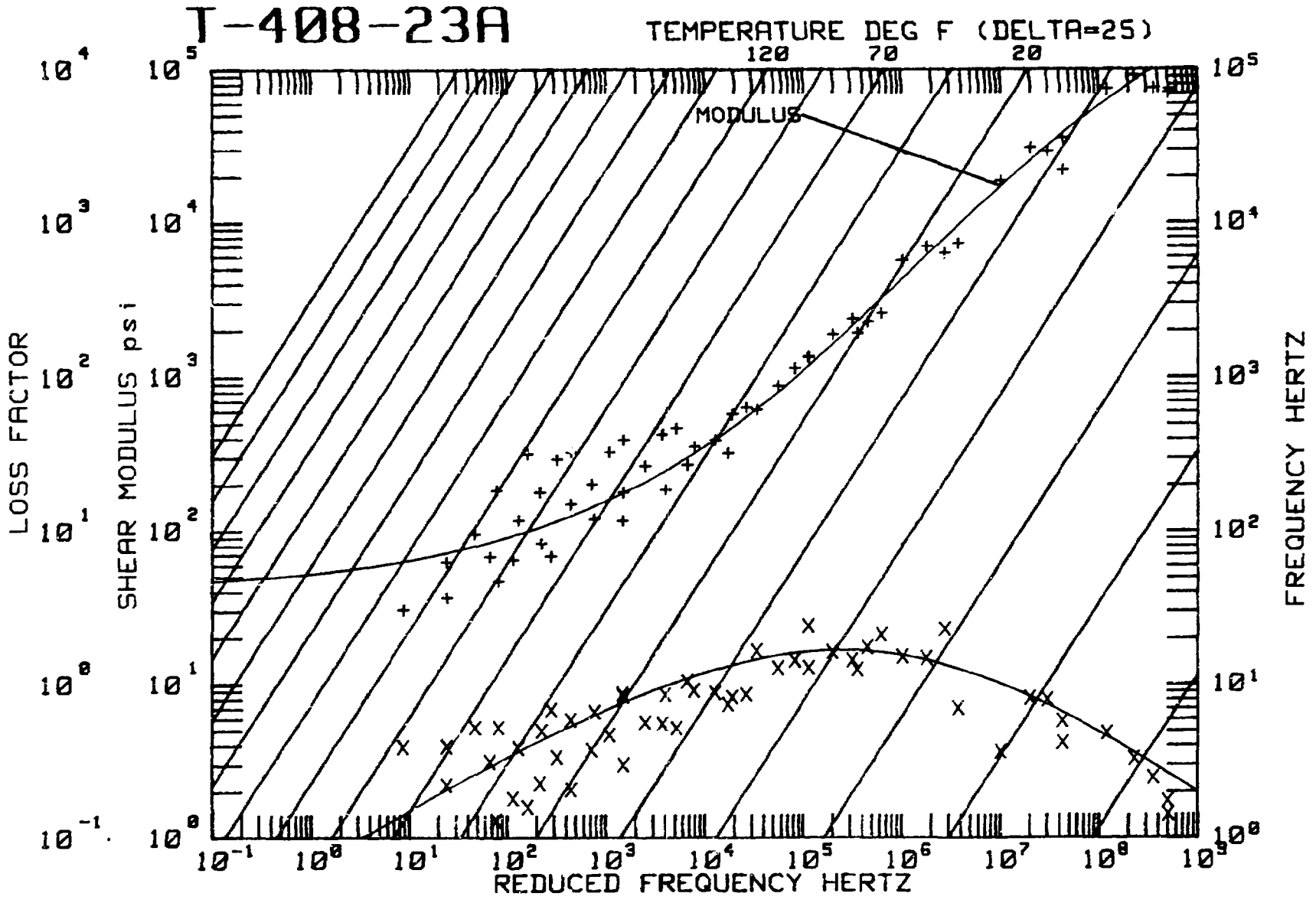
LOG(FR)=LOG(F)-12(T-T0)/(525+T-T0)
A=(LOG(FR)-LOG(FROL))/C

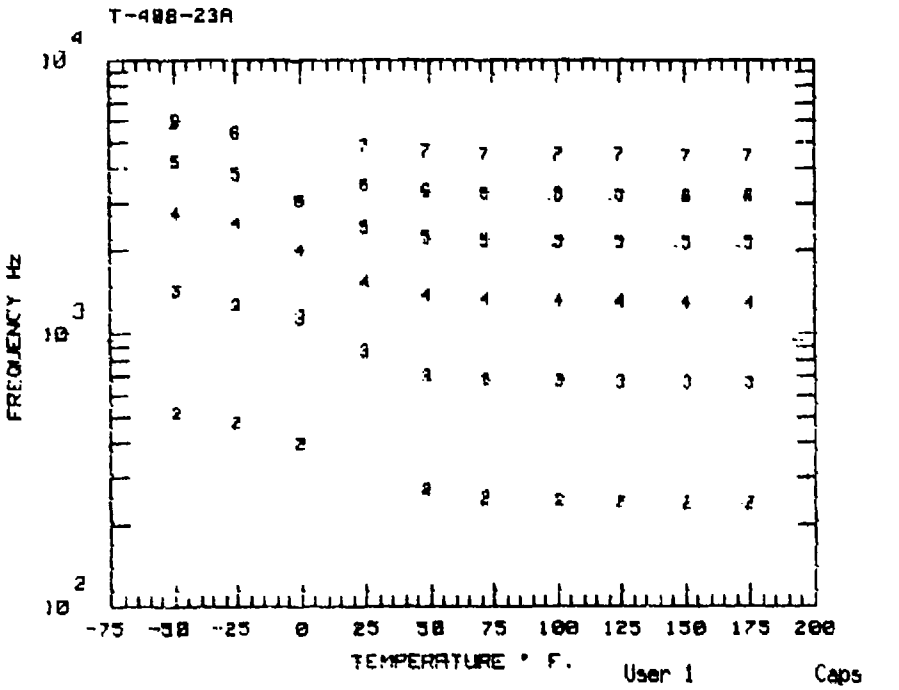
MATERIAL CODE: ED0436
MATERIAL: M880221E-4
MANUFACTURER: MONSANTO
REMARKS:
DATE: 14 Mar 1988
ENTERED BY: TCM
BEAM MATERIAL: STAINLESS STEEL
BEAM NUMBER: SS-7-103 & SS-7-104
BEAM TYPE: SANDWICH BEAM
BEAM LENGTH: 7 in
BEAM THICKNESS: .05983 in
BEAM DENSITY: .283 lb/cu in
DAMPING MATERIAL THICKNESS: .004 in
DAMPING MATERIAL DENSITY: .0376 lb/cu in

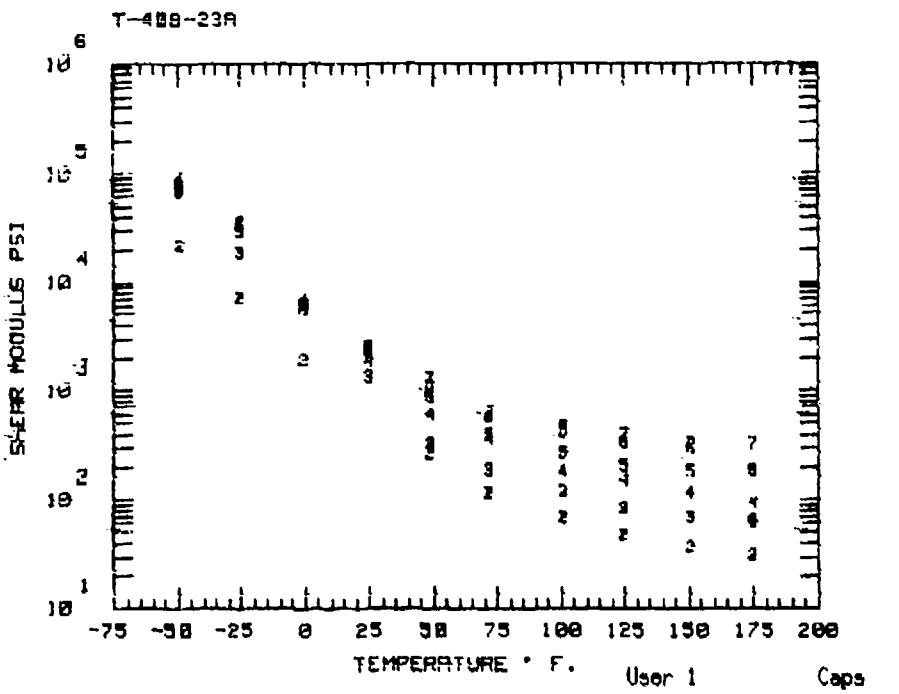
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	SHEAR MODULUS PSI	MATERIAL LOSS FACTOR
1	-90	3	684.5	1388.9	.026533	4.1381E+04	.433007
2	-90	4	1350.3	2528.3	.028355	2.3827E+04	.152126
3	-89	2	245.7	506.9	.013720	3.0998E+04	.444505
4	-89	5	2238.2	4030.0	.029022	2.7510E+04	.123928
5	-79	2	245.4	506.0	.018166	2.7006E+04	.569040
6	-78	3	683.8	1379.0	.033099	3.3947E+04	.462889
7	-77	4	1348.3	2489.8	.042293	2.0341E+04	.207908
8	-76	5	2234.9	3951.3	.048179	2.3330E+04	.190928
9	-69	4	1347.2	2424.7	.068019	1.5703E+04	.294407
10	-69	5	2233.2	3844.1	.075859	1.8694E+04	.276154
11	-68	3	683.1	1351.5	.054784	2.1088E+04	.537629
12	-67	2	245.1	500.7	.030813	1.6209E+04	.632626
13	-59	5	2230.7	3650.7	.131660	1.2750E+04	.433634
14	-58	4	1345.5	2311.9	.122078	1.0375E+04	.454924
15	-57	2	244.8	490.7	.064414	7.9232E+03	.815918
16	-57	3	682.4	1304.1	.101049	1.1466E+04	.682916
17	-50	4	1344.3	2169.4	.192153	6.4696E+03	.646712
18	-50	5	2228.5	3422.0	.189917	8.3662E+03	.591248
19	-49	2	244.6	474.4	.115845	4.0818E+03	.946950
20	-49	3	681.8	1242.7	.164934	6.4835E+03	.847743
21	-39	2	244.4	447.5	.177003	2.2560E+03	.958563
22	-39	3	681.2	1135.4	.263194	3.1895E+03	1.058858
23	-38	4	1342.7	1937.5	.256395	3.3552E+03	.814511
24	-39	5	2225.8	3084.7	.223075	4.7089E+03	.691777
25	-29	3	680.5	975.5	.254632	1.6378E+03	.806625
26	-29	4	1341.2	1695.3	.245544	1.6233E+03	.871469
27	-29	5	2223.3	2753.0	.201209	2.4516E+03	.726524
28	-20	4	1339.9	1549.9	.208205	8.6886E+02	.977169
29	-20	5	2221.1	2509.7	.211728	1.1520E+03	1.143431
30	-19	3	679.9	878.1	.227844	9.4992E+02	.764747
31	-10	3	679.3	792.4	.186059	4.7925E+02	.824305
32	-9	4	1338.3	1445.3	.152585	4.1869E+02	1.164543

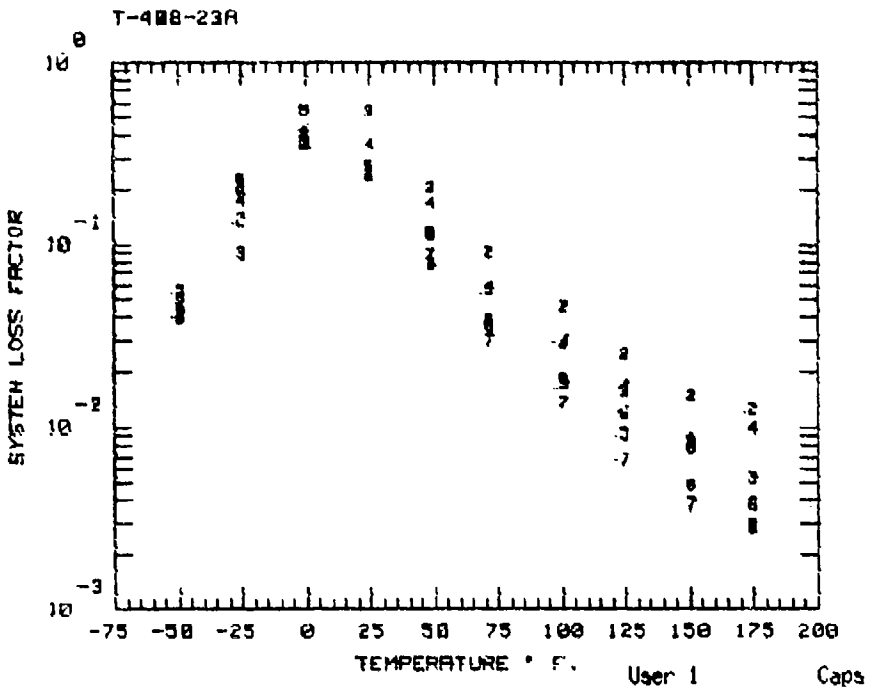
MATERIAL CODE: ED0436
MATERIAL: M880221E-4
MANUFACTURER: MONSANTO
REMARKS:
DATE: 14 Mar 1988
ENTERED BY: TCM
BEAM MATERIAL: STAINLESS STEEL
BEAM NUMBER: SS-7-103 & SS-7-104
BEAM TYPE: SANDWICH BEAM
BEAM LENGTH: 7 in
BEAM THICKNESS: .05983 in
BEAM DENSITY: .283 lb/cu in
DAMPING MATERIAL THICKNESS: .004 in
DAMPING MATERIAL DENSITY: .0376 lb/cu in

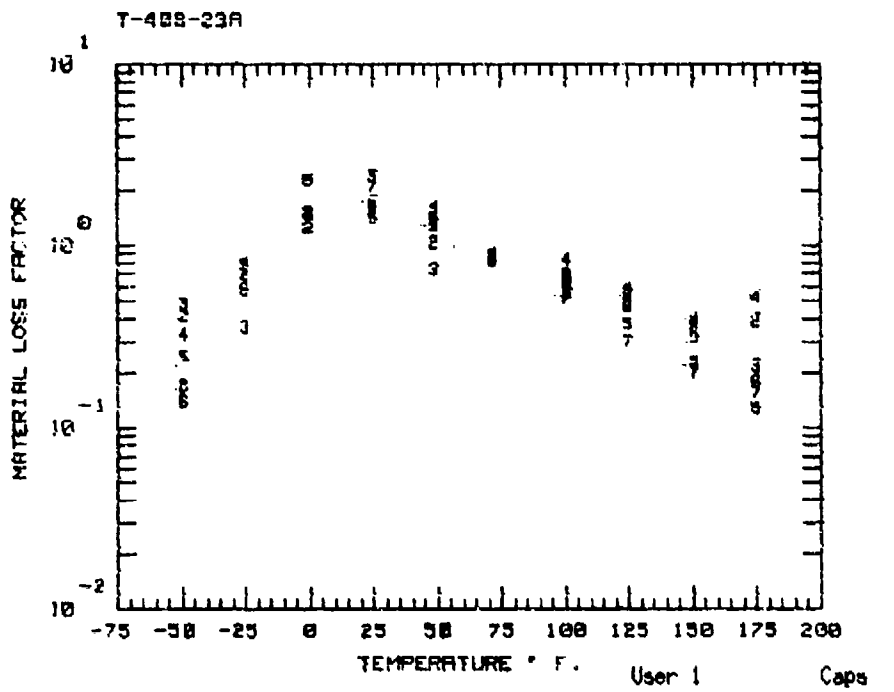
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	SHEAR MODULUS PSI	MATERIAL LOSS FACTOR
33	-9	5	2218.4	2378.8	.152303	6.2324E+02	1.266890
34	+0	3	678.6	736.2	.143425	2.2674E+02	1.034601
35	+1	4	1336.8	1391.3	.111465	2.1082E+02	1.490489
36	+1	5	2215.9	2297.7	.103954	3.1893E+02	1.509126
37	+11	3	677.9	704.8	.107935	1.0365E+02	1.474261
38	+11	4	1335.3	1360.8	.067986	1.0345E+02	1.726991
39	+11	5	2213.4	2248.0	.064256	1.4350E+02	1.934802
40	+20	2	242.8	251.4	.105053	3.2926E+01	1.599769
41	+20	3	677.3	694.2	.067153	6.7737E+01	1.338535
42	+20	4	1334.0	1346.4	.043573	5.5775E+01	1.986862
43	+20	5	2211.2	2224.5	.041583	6.5715E+01	2.647238
44	+30	2	242.6	247.6	.070882	2.0096E+01	1.686506
45	+30	3	676.6	687.8	.043850	4.6608E+01	1.234393
46	+30	4	1332.5	1337.4	.028368	2.8345E+01	2.494802
47	+40	2	242.3	245.5	.048118	1.3615E+01	1.647507
48	+41	4	1330.9	1332.6	.018860	1.6790E+01	2.772350
49	+50	2	242.1	244.0	.033418	9.1202E+00	1.677381
50	+51	4	1329.4	1329.2	.013052	9.7270E+00	3.289179
51	+60	2	241.8	243.0	.025537	6.1518E+00	1.876329
52	+71	2	241.5	242.2	.018218	4.4929E+00	1.817582
53	+80	2	241.3	241.7	.013702	3.4933E+00	1.748471
54	+90	2	241.0	241.7	.010863	4.4571E+00	1.087911
55	+90	5	2193.9	2191.1	.003849	7.6231E+00	2.032023
56	+100	2	240.8	241.7	.009081	5.4166E+00	.749262
57	+112	2	240.4	241.3	.006785	5.0220E+00	.601406
58	+119	2	240.3	241.0	.005951	4.6110E+00	.572817

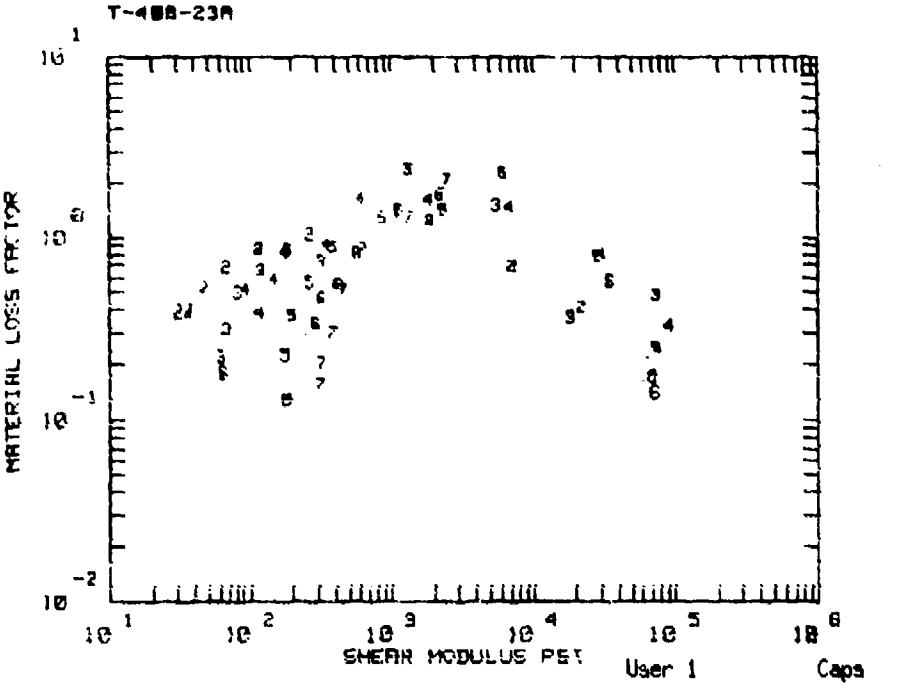

T-408-23A
TEMPERATURE DEG F (DELTA=25)
120
70
20
MODULUS
LOSS FACTOR
SHEAR MODULUS psi
FREQUENCY HERTZ
REDUCED FREQUENCY HERTZ
10^{-1} 10^{0} 10^{1} 10^{2} 10^{3} 10^{4} 10^{5} 10^{6} 10^{7} 10^{8} 10^{9}


T-488-23A
FREQUENCY Hz
TEMPERATURE ° F.
-75 -50 -25 0 25 50 75 100 125 150 175 200
User 1
Caps


T-488-23A
SHEAR MODULUS PSI
TEMPERATURE ° F.
-75 -50 -25 0 25 50 75 100 125 150 175 200
User 1
Caps


T-488-23A
SYSTEM LOSS FACTOR
10^0
10^-1
10^-2
10^-3
-75 -50 -25 0 25 50 75 100 125 150 175 200
TEMPERATURE ° F.
User 1
Caps


T-488-23A
MATERIAL LOSS FACTOR
10^1
10^0
10^-1
10^-2
-75 -50 -25 0 25 50 75 100 125 150 175 200
TEMPERATURE ° F.
User 1
Caps



MATERIAL CODE: T40823
MATERIAL: T-408-23A

UNITS ARE ENGLISH
LOG(M)=LOG(ML)+(2LOG(MROM/ML))/(1+(FQROM/FR)^SLOPE)

TZERO	FQROM	MROM	SLOPE	ML
104.0	1.500E+06	5.511E+03	0.250	4.061E+01

LOG(ETA)=LOG(ETFROL)+((SH+SL)A+(SL-SH)(1-SQR(1+A^2)))C/2

TZERO	ETFROL	SL	SH	FROL	C
104.0	1.650	.430	-.540	5.000E+05	2.800

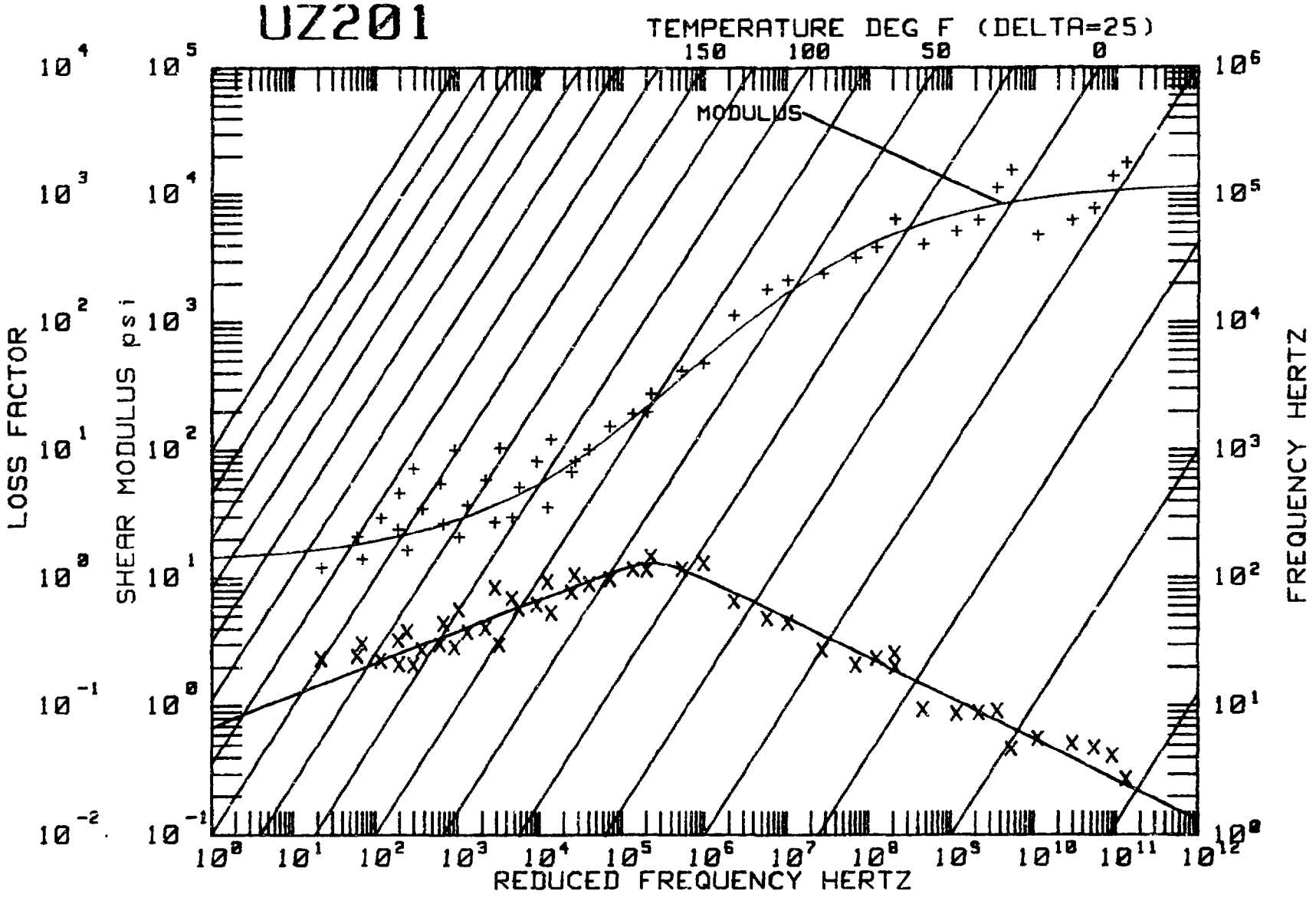
LOG(FR)=LOG(F)-12(T-T0)/(525+T-T0)
A=(LOG(FR)-LOG(FROL))/C

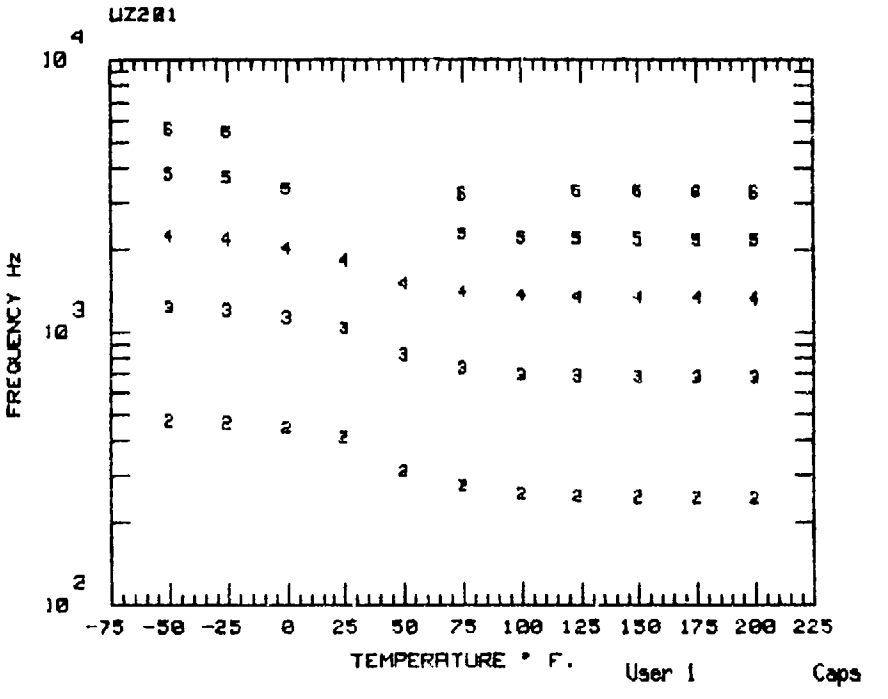
MATERIAL CODE: T40823
MATERIAL: T-408-23A
MANUFACTURER: ROCKET RESEARCH
REMARKS:
DATE: 13 Jun 1988
ENTERED BY:
BEAM MATERIAL:
BEAM NUMBER:
BEAM TYPE: SANDWICH BEAM
BEAM LENGTH: .0 in
BEAM THICKNESS: .0 in
BEAM DENSITY: .0 lb/cu in
DAMPING MATERIAL THICKNESS: 0 in
DAMPING MATERIAL DENSITY: 0 lb/cu in

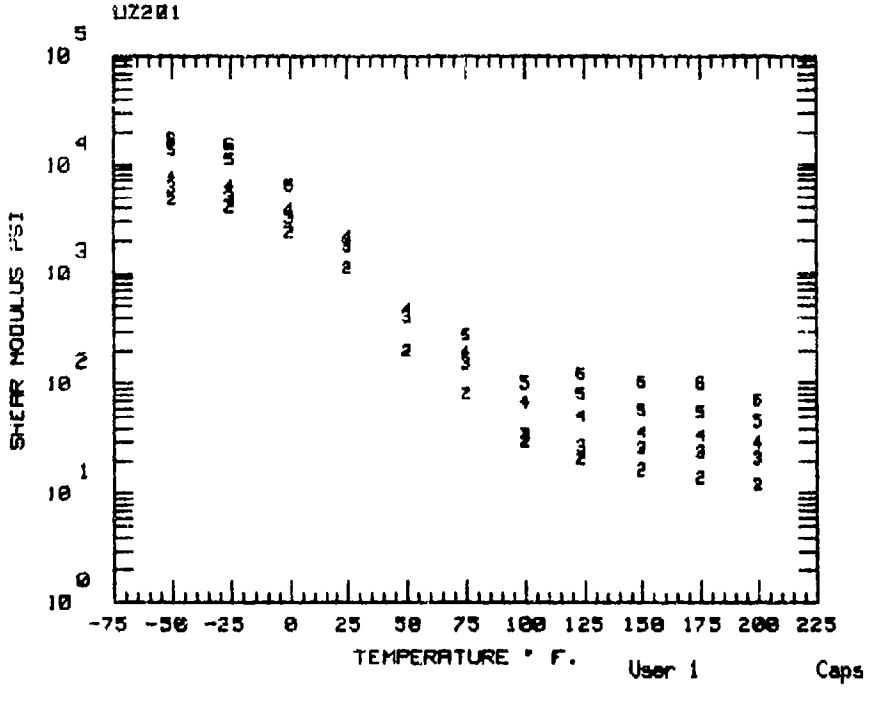
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	SHEAR MODULUS PSI	MATERIAL LOSS FACTOR
1	-49	2	241.0	512.0	.042600	2.1670E+04	.412800
2	-49	3	666.0	1435.0	.039300	7.3820E+04	.479400
3	-49	4	1317.0	2746.0	.043700	8.0250E+04	.324800
4	-49	5	2174.0	4243.0	.055400	7.4460E+04	.245000
5	-49	6	3245.0	5979.0	.040800	7.3570E+04	.141000
6	-25	2	240.0	474.0	.137200	7.2170E+03	.697600
7	-49	6	3245.0	5942.0	.050500	7.0160E+04	.171400
8	-25	3	665.0	1274.0	.089800	1.8470E+04	.360000
9	-25	4	1313.0	2538.0	.172200	3.0380E+04	.806100
10	-25	5	2169.0	3818.0	.227900	2.8810E+04	.787000
11	-25	6	3237.0	5390.0	.193600	3.5280E+04	.574900
12	+0	2	240.0	397.0	.351600	1.9010E+03	1.250300
13	+0	3	664.0	1147.0	.366600	5.5990E+03	1.504300
14	+0	4	1310.0	2016.0	.418200	6.9020E+03	1.472400
15	+0	5	2164.0	3057.0	.540000	6.2590E+03	2.275400
16	+25	3	663.0	865.0	.538000	1.3420E+03	2.391700
17	+25	4	1306.0	1541.0	.352000	1.8620E+03	1.613400
18	+25	5	2158.0	2444.0	.269400	2.3380E+03	1.424600
19	+25	6	3222.0	3503.0	.240700	2.2500E+03	1.735400
20	+25	7	4507.0	4834.0	.245600	2.5490E+03	2.092400
21	+49	2	238.0	269.0	.205200	2.6830E+02	1.044100
22	+49	3	662.0	698.0	.078800	3.2120E+02	.741300
23	+49	4	1303.0	1377.0	.168500	6.1400E+02	1.642900
24	+49	5	2153.0	2254.0	.115800	8.7370E+02	1.275400
25	+49	6	3214.0	3343.0	.114300	1.1290E+03	1.426900
26	+49	7	4497.0	4644.0	.088300	1.3310E+03	1.280300
27	+72	2	238.0	251.0	.091400	1.1550E+02	.864000
28	+72	3	661.0	681.0	.056400	1.8490E+02	.854400
29	+72	4	1300.0	1338.0	.058400	3.5280E+02	.911400
30	+72	5	2149.0	2186.0	.038100	3.9000E+02	.880600
31	+72	6	3207.0	3263.0	.035800	5.7270E+02	.821900
32	+72	7	4487.0	4544.0	.029800	6.3200E+02	.855000

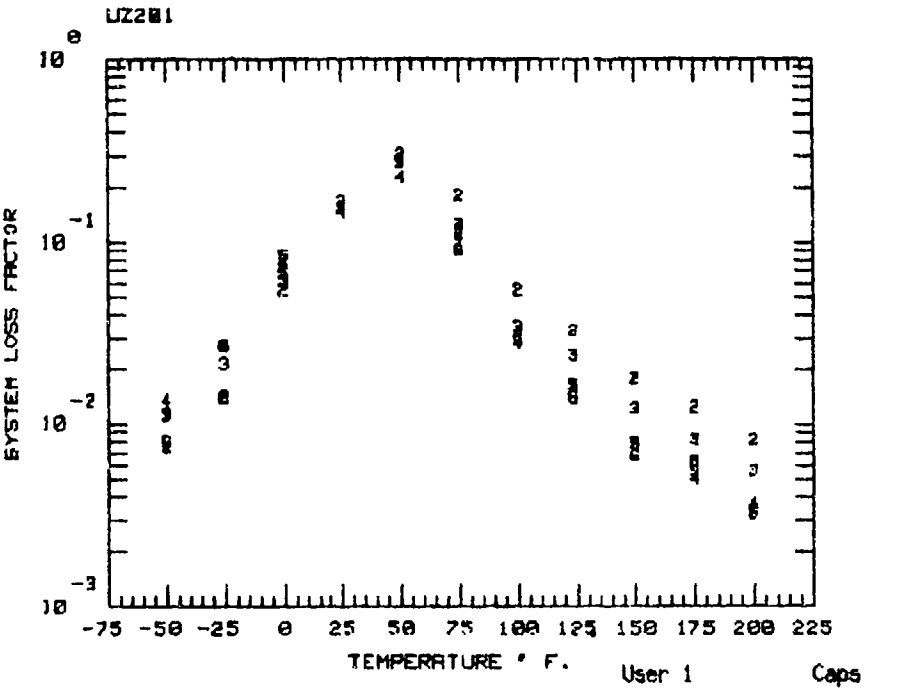
MATERIAL CODE: T40823
MATERIAL: T-408-23A
MANUFACTURER: ROCKET RESEARCH
REMARKS:
DATE: 13 Jun 1988
ENTERED BY:
BEAM MATERIAL:
BEAM NUMBER:
BEAM TYPE: SANDWICH BEAM
BEAM LENGTH: 0 in
BEAM THICKNESS: 0 in
BEAM DENSITY: 0 lb/cu in
DAMPING MATERIAL THICKNESS: 0 in
DAMPING MATERIAL DENSITY: 0 lb/cu in

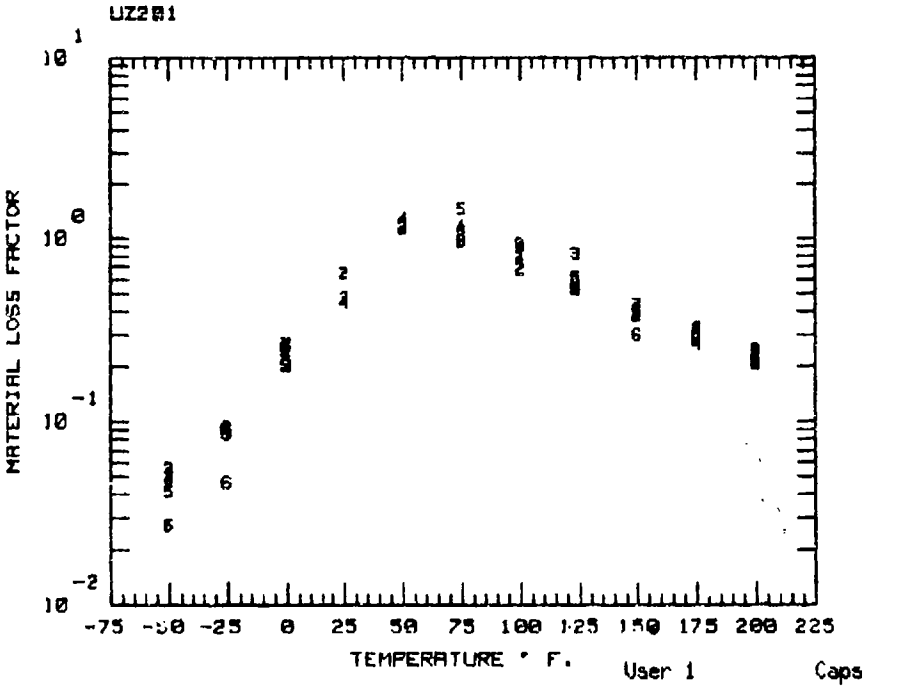
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	SHEAR MODULUS PSI	MATERIAL LOSS FACTOR
33	+101	2	237.0	244.0	.045800	6.7900E+01	.681600
34	+101	3	660.0	671.0	.029200	1.1920E+02	.657700
35	+101	4	1296.0	1312.0	.028400	1.7720E+02	.833300
36	+101	5	2142.0	2165.0	.017300	2.6380E+02	.562300
37	+101	6	3198.0	3235.0	.018200	4.2350E+02	.552000
38	+101	7	4474.0	4510.0	.013500	4.6410E+02	.516100
39	+125	2	237.0	241.0	.025100	4.6660E+01	.523300
40	+125	3	658.0	666.0	.015600	8.2410E+01	.495000
41	+125	4	1293.0	1305.0	.016900	1.4830E+02	.583900
42	+125	5	2137.0	2153.0	.009200	2.0020E+02	.371000
43	+125	6	3190.0	3215.0	.011900	3.2410E+02	.464200
44	+125	7	4463.0	4490.0	.006600	3.8850E+02	.297100
45	+151	2	236.0	239.0	.014900	3.6300E+01	.391000
46	+151	3	657.0	663.0	.008200	6.7730E+01	.312300
47	+151	4	1288.0	1297.0	.008900	1.1700E+02	.383300
48	+151	5	2132.0	2143.0	.004800	1.7780E+02	.224400
49	+151	6	3182.0	3202.0	.007700	2.9040E+02	.333600
50	+151	7	4452.0	4470.0	.003800	3.2380E+02	.204100
51	+175	2	235.0	238.0	.012600	3.0490E+01	.388600
52	+175	4	1286.0	1291.0	.009900	9.4830E+01	.523000
53	+175	5	2127.0	2139.0	.002800	1.8340E+02	.129300
54	+175	6	3174.0	3192.0	.003800	6.4400E+01	.179400
55	+175	7	4442.0	4459.0	.002900	3.1700E+02	.158200
56	+175	3	656.0	661.0	.005300	6.2430E+01	.218700

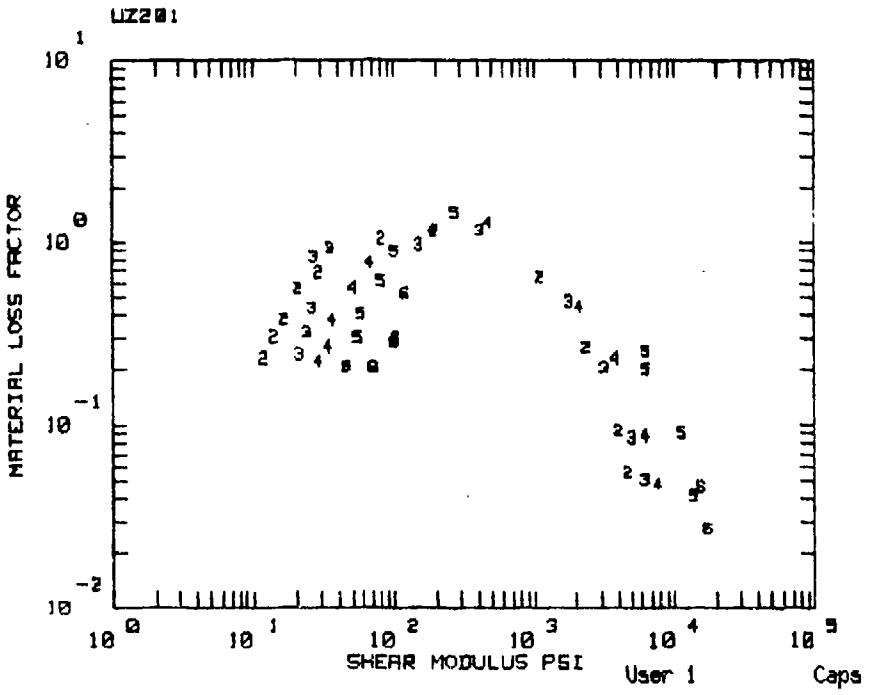

UZ201
TEMPERATURE DEG F (DELTA=25)
150
100
50
0
MODULUS
LOSS FACTOR
SHEAR MODULUS psi
FREQUENCY HERTZ
REDUCED FREQUENCY HERTZ
10^{-2}
10^{-1}
10^{0}
10^{1}
10^{2}
10^{3}
10^{4}
10^{5}
10^{6}
10^{7}
10^{8}
10^{9}
10^{10}
10^{11}
10^{12}


UZ201
FREQUENCY Hz
TEMPERATURE ° F.
User 1
Caps


UZ201
SHEAR MODULUS PSI
TEMPERATURE ° F.
User 1
Caps


UZ281
SYSTEM LOSS FACTOR
TEMPERATURE ° F.
User 1
Caps


UZ281
MATERIAL LOSS FACTOR
TEMPERATURE ° F.
User 1
Caps



MATERIAL CODE: ED0355
MATERIAL: UZ201

UNITS ARE ENGLISH
LOG(M)=LOG(ML)+(2LOG(MROM/ML))/(1+(FQROM/FR)^SLOPE)

TZERO	FQROM	MROM	SLOPE	ML
150.0	6.174E+05	4.075E+02	0.320	1.330E+01

LOG(ETA)=LOG(ETFROL)+((SH+SL)A+(SL-SH)(1-SQR(1+A^2)))C/2

TZERO	ETFROL	SL	SH	FROL	C
150.0	1.321	.250	-.315	2.579E+05	.250

LOG(FR)=LOG(F)-12(T-T0)/(525+T-T0)
A=(LOG(FR)-LOG(FROL))/C

MATERIAL CODE: ED0355
MATERIAL: UZ201
MANUFACTURER: COATING SCIENCE
REMARKS:
DATE: 28 Dec 1987
ENTERED BY: TVG
BEAM MATERIAL: STAINLESS STEEL
BEAM NUMBER: 7-105 $ 7-125
BEAM TYPE: SANDWICH BEAM
BEAM LENGTH: 7 in
BEAM THICKNESS: .06029 in
BEAM DENSITY: .283 lb/cu in
DAMPING MATERIAL THICKNESS: .0028 in
DAMPING MATERIAL DENSITY: 0 lb/cu in

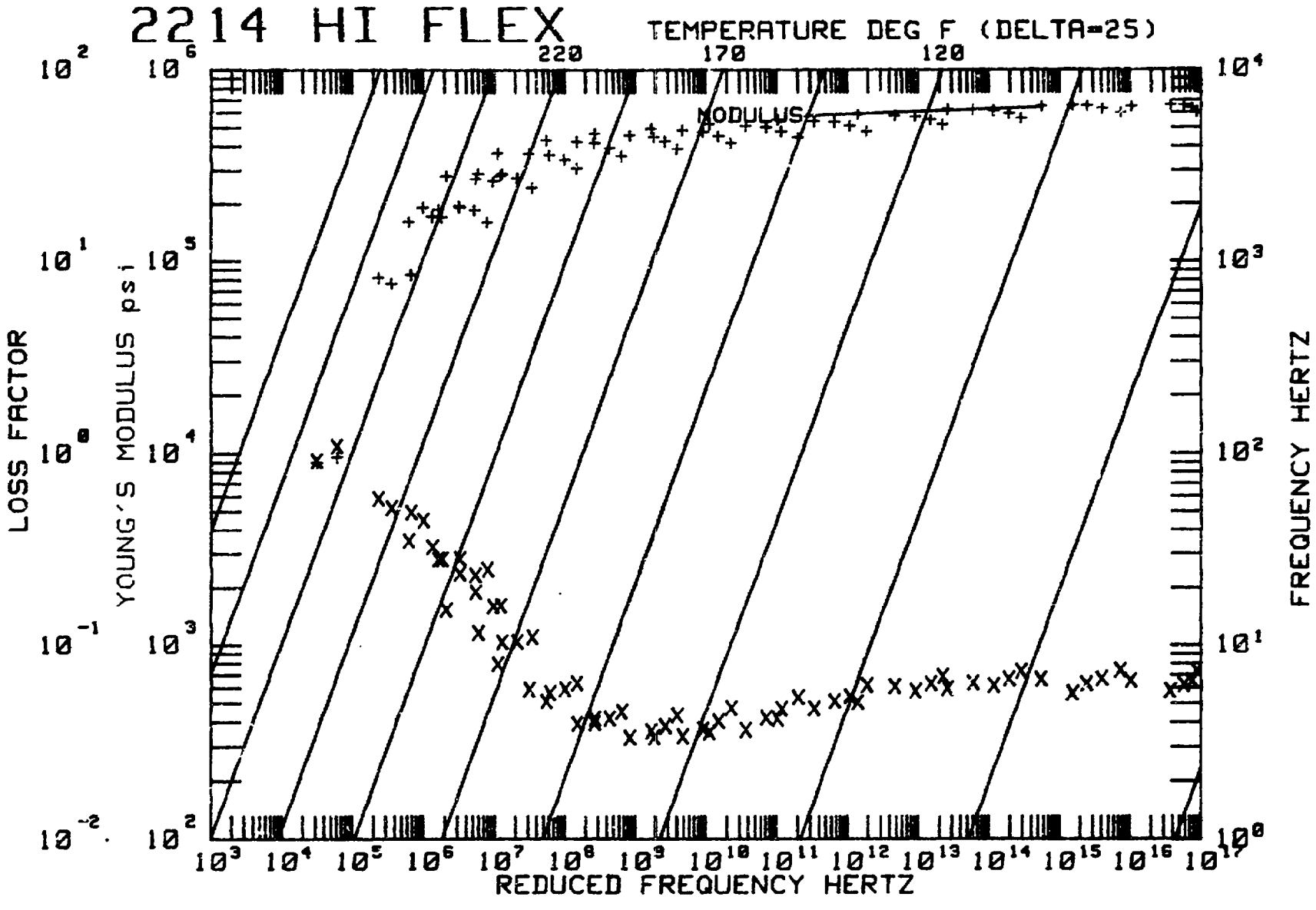
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	SHEAR MODULUS PSI	MATERIAL LOSS FACTOR
1	-50	2	244.3	469.1	.007460	4.7269E+03	.055521
2	-50	3	686.9	1230.8	.011370	6.2082E+03	.050521
3	-50	4	1348.8	2277.8	.013390	7.6754E+03	.047294
4	-50	5	2239.1	3823.0	.011250	1.3846E+04	.041080
5	-50	6	3348.2	5579.3	.007990	1.7506E+04	.027202
6	-25	2	244.1	463.1	.013970	4.0246E+03	.092826
7	-25	3	685.2	1200.4	.021410	5.0930E+03	.085935
8	-25	4	1345.6	2208.0	.026630	6.2656E+03	.087555
9	-25	5	2233.2	3703.0	.026900	1.1186E+04	.090624
10	-25	6	3339.4	5467.0	.014080	1.5465E+04	.045996
11	+0	2	243.6	442.6	.054680	2.3734E+03	.265718
12	+0	3	683.5	1124.0	.061480	3.1572E+03	.204795
13	+0	4	1342.4	2036.7	.077630	3.7881E+03	.230207
14	+0	5	2227.3	3384.3	.067430	5.3955E+03	.199593
15	+0	5	2227.3	3384.3	.084780	6.3377E+03	.252336
16	+25	2	243.1	410.0	.168290	1.1166E+03	.647561
17	+25	3	681.9	1033.0	.153920	1.7879E+03	.473188
18	+25	4	1339.3	1848.0	.146100	2.1171E+03	.440368
19	+50	2	242.6	307.0	.301300	1.9601E+02	1.147840
20	+50	3	680.2	821.0	.275030	4.1094E+02	1.163332
21	+50	4	1336.1	1507.0	.226280	4.6963E+02	1.282715
22	+75	2	242.1	271.0	.181370	8.1260E+01	1.044428
23	+75	3	678.5	733.2	.126300	1.5160E+02	.967533
24	+75	4	1332.9	1403.5	.105880	1.9057E+02	1.163178
25	+75	5	2209.6	2313.1	.116730	2.7424E+02	1.452127
26	+75	6	3304.5	3232.6	.090580	0.0000E+00	0.000000
27	+100	2	241.6	252.4	.054950	2.9471E+01	.685771
28	+100	3	676.9	690.1	.034490	3.5311E+01	.929083
29	+100	4	1329.7	1354.8	.027610	6.7255E+01	.767375
30	+100	5	2203.7	2241.4	.029180	1.0109E+02	.891476
31	+124	2	241.2	248.8	.032760	2.0694E+01	.556503
32	+124	3	675.3	685.4	.023930	2.6941E+01	.828738

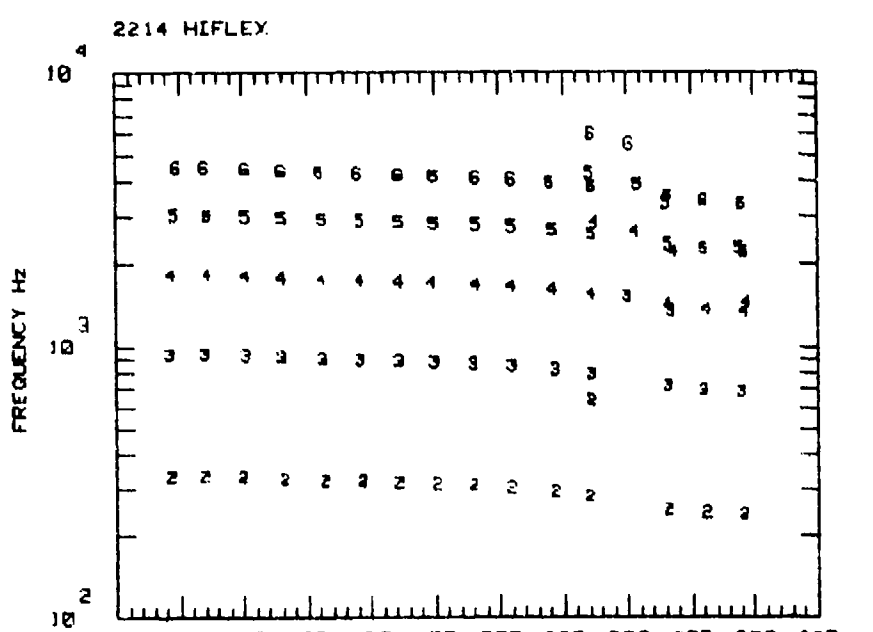
MATERIAL CODE: ED0355
MATERIAL: UZ201
MANUFACTURER: COATING SCIENCE
REMARKS:
DATE: 28 Dec 1987
ENTERED BY: TVG
BEAM MATERIAL: STAINLESS STEEL
BEAM NUMBER: 7-105 & 7-125
BEAM TYPE: SANDWICH BEAM
BEAM LENGTH: 7 in
BEAM THICKNESS: .06029 in
BEAM DENSITY: .283 lb/cu in
DAMPING MATERIAL THICKNESS: .0028 in
DAMPING MATERIAL DENSITY: 0 lb/cu in

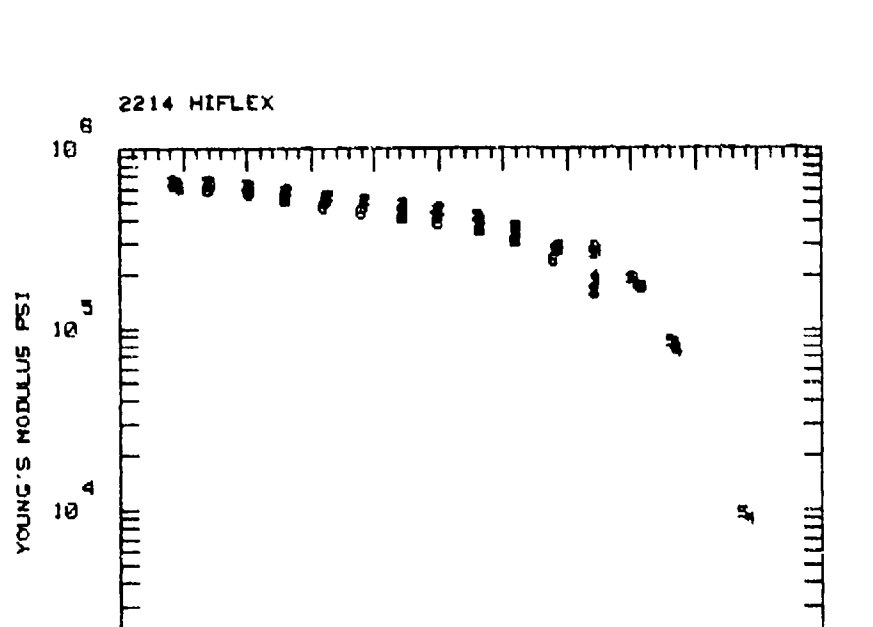
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	SHEAR MODULUS PSI	MATERIAL LOSS FACTOR
33	+124	4	1326.7	1345.8	.015680	5.1096E+01	.562919
34	+124	5	2198.0	2228.3	.016250	8.1042E+01	.609510
35	+124	6	3287.4	3332.5	.014010	1.2127E+02	.526759
36	+150	2	240.7	246.7	.017880	1.6288E+01	.376291
37	+150	3	673.5	683.3	.012220	2.6115E+01	.433745
38	+150	4	1323.4	1337.1	.007554	3.6453E+01	.373352
39	+150	5	2191.9	2213.7	.007815	5.8078E+01	.401787
40	+150	6	3278.3	3316.9	.006753	1.0340E+02	.294293
41	+175	2	240.2	245.4	.012430	1.3899E+01	.301875
42	+175	3	671.9	680.8	.008284	2.3719E+01	.320843
43	+175	4	1320.2	1333.1	.005116	3.4154E+01	.268062
44	+175	5	2186.0	2206.6	.005484	5.4720E+01	.297137
45	+175	6	3269.6	3307.0	.006296	9.9966E+01	.281993
46	+200	2	239.7	244.2	.008232	1.1937E+01	.229659
47	+200	3	670.2	678.1	.005560	2.0898E+01	.242018
48	+200	4	1317.1	1328.1	.003644	2.9186E+01	.221388
49	+200	5	2180.1	2197.4	.003240	4.575[illegible]+01	.207810
50	+200	6	3260.9	3287.6	.003300	7.1030E+01	.204760

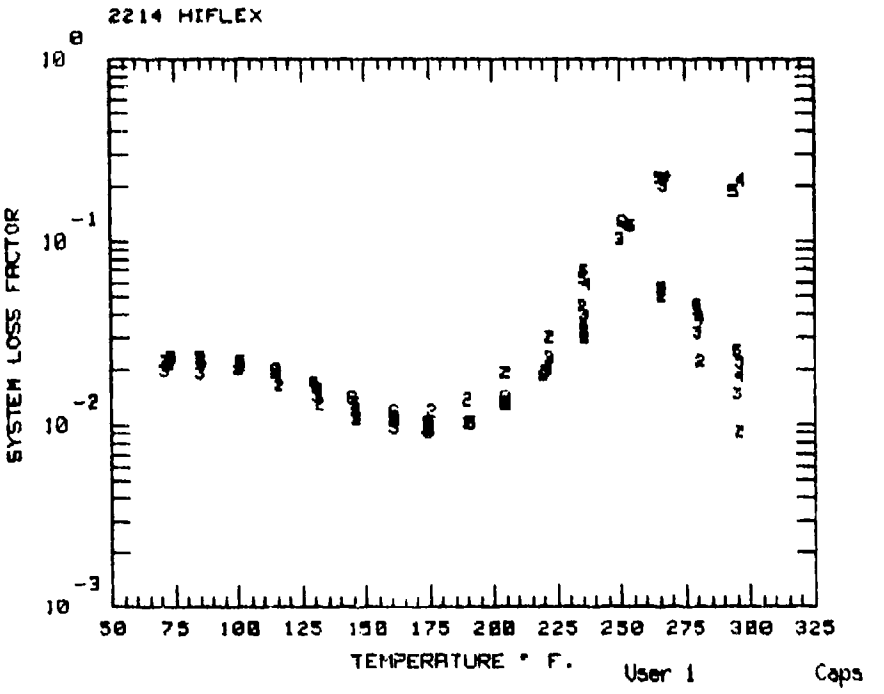
APPENDIX C

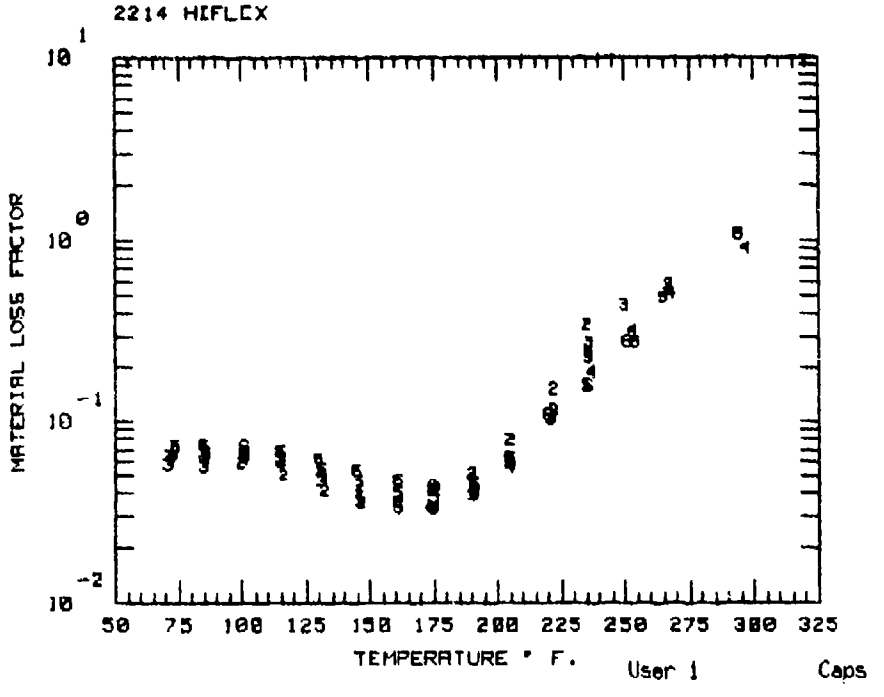
STRUCTURAL ADHESIVES

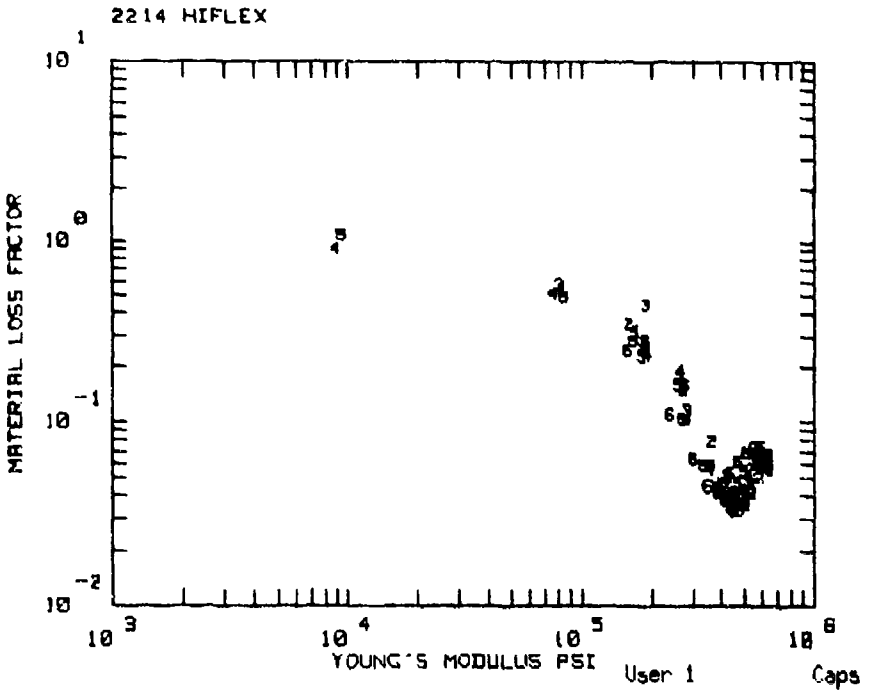

2214 HI FLEX
TEMPERATURE DEG F (DELTA=25)
220
170
120
MODULUS
LOSS FACTOR
YOUNG'S MODULUS psi
FREQUENCY HERTZ
REDUCED FREQUENCY HERTZ
10^{-2} 10^{-1} 10^{0} 10^{1} 10^{2}
10^{2} 10^{3} 10^{4} 10^{5} 10^{6}
10^{0} 10^{1} 10^{2} 10^{3} 10^{4}
10^{3} 10^{4} 10^{5} 10^{6} 10^{7} 10^{8} 10^{9} 10^{10} 10^{11} 10^{12} 10^{13} 10^{14} 10^{15} 10^{16} 10^{17}


2214 HIFLEX
FREQUENCY Hz
10^4
10^3
10^2
50 75 100 125 150 175 200 225 250 275 300 325
TEMPERATURE ° F.
User 1
Caps


2214 HIFLEX
YOUNG'S MODULUS PSI
10^6
10^5
10^4
10^3
50 75 100 125 150 175 200 225 250 275 300 325
TEMPERATURE ° F.
User 1
Caps


2214 HIFLEX
SYSTEM LOSS FACTOR
10^0
10^-1
10^-2
10^-3
50 75 100 125 150 175 200 225 250 275 300 325
TEMPERATURE ° F.
User 1
Caps


2214 HIFLEX
MATERIAL LOSS FACTOR
10^1
10^0
10^-1
10^-2
50 75 100 125 150 175 200 225 250 275 300 325
TEMPERATURE ° F.
User 1
Caps



MATERIAL CODE: CM0434
MATERIAL: 2214 HI FLEX

UNITS ARE ENGLISH
LOG(M)=LOG(ML)+(2LOG(MROM/ML))/(1+(FQROM/FR)^SLOPE)

TZERO	FQROM	MROM	SLOPE	ML
350.0	0.000E+00	0.000E+00	0.000	0.000E+00

LOG(ETA)=LOG(ETFROL)+((SH+SL)A+(SL-SH)(1-SQR(1+A^2)))C/2

TZERO	ETFROL	SL	SH	FROL	C
350.0	0.000	0.000	0.000	0.000E+00	0.000

LOG(FR)=LOG(F)-12(T-T0)/(525+T-T0)
A=(LOG(FR)-LOG(FROL))/C

MATERIAL CODE: CM0434
MATERIAL: 2214 HI FLEX
MANUFACTURER: 3M
REMARKS:
DATE: 12 Mar 1988
ENTERED BY: BJF
BEAM MATERIAL: ALUMINUM
BEAM NUMBER: AL 7-132
BEAM TYPE: FREE LAYER ONE SIDE
BEAM LENGTH: 7 in
BEAM THICKNESS: .06014 in
BEAM DENSITY: .283 lb/cu in
DAMPING MATERIAL THICKNESS: .0985 in
DAMPING MATERIAL DENSITY: .0542 lb/cu in

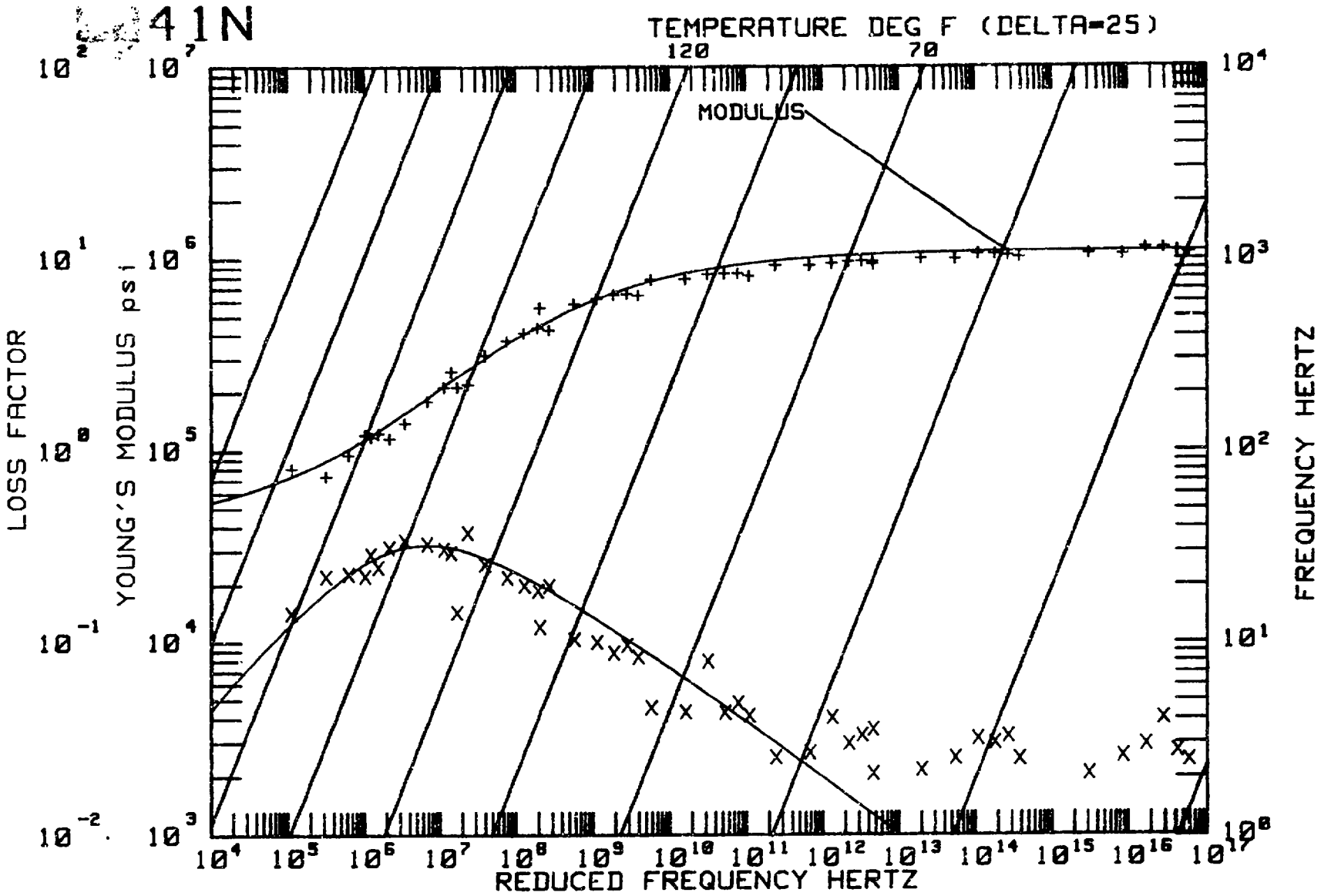
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	YOUNG'S MODULUS PSI	MATERIAL LOSS FACTOR
1	+71	3	862.7	935.1	.019841	6.4814E+05	.057526
2	+72	2	305.4	330.9	.022339	6.3495E+05	.064892
3	+72	4	1697.3	1836.5	.021164	6.4671E+05	.061745
4	+73	5	2816.6	3025.8	.021531	6.2463E+05	.064498
5	+74	6	4235.9	4503.5	.023431	5.9632E+05	.073082
6	+85	2	304.8	330.9	.022921	6.3970E+05	.066117
7	+85	3	860.9	933.0	.019299	6.4493E+05	.055978
8	+85	6	4229.5	4491.8	.023450	5.9052E+05	.073460
9	+86	4	1693.5	1831.2	.021407	6.4131E+05	.062604
10	+86	5	2810.9	3019.0	.022198	6.2123E+05	.066553
11	+100	2	304.1	328.1	.020093	6.1456E+05	.059245
12	+101	3	858.8	923.4	.021169	6.1262E+05	.063197
13	+101	4	1689.5	1810.8	.020301	6.0568E+05	.061343
14	+101	5	2804.2	2984.0	.021257	5.8426E+05	.066053
15	+101	6	4220.2	4439.3	.022242	5.5311E+05	.072502
16	+115	3	856.9	911.2	.019470	5.7003E+05	.060679
17	+115	4	1685.7	1787.5	.018209	5.6439E+05	.057398
18	+115	5	2798.0	2944.8	.019257	5.4242E+05	.062628
19	+115	6	4212.0	4380.2	.019904	5.1026E+05	.068296
20	+116	2	303.4	324.3	.016429	5.7800E+05	.050190
21	+130	6	4203.3	4323.8	.016993	4.7070E+05	.061452
22	+131	3	854.8	899.8	.014338	5.3188E+05	.046596
23	+131	4	1681.4	1765.6	.015463	5.2734E+05	.050787
24	+131	5	2790.9	2907.0	.015821	5.0366E+05	.053878
25	+132	2	302.7	320.6	.013029	5.4379E+05	.041264
26	+145	6	4194.6	4274.9	.014035	4.3749E+05	.053275
27	+146	3	852.8	891.0	.010798	5.0378E+05	.036266
28	+146	4	1677.3	1746.5	.012270	4.9593E+05	.041854
29	+146	5	2784.2	2874.7	.013070	4.7150E+05	.046403
30	+147	2	302.0	317.3	.010732	5.1430E+05	.035312
31	+161	2	301.3	314.3	.010574	4.8789E+05	.035768
32	+161	3	850.8	882.8	.009682	4.7820E+05	.033576

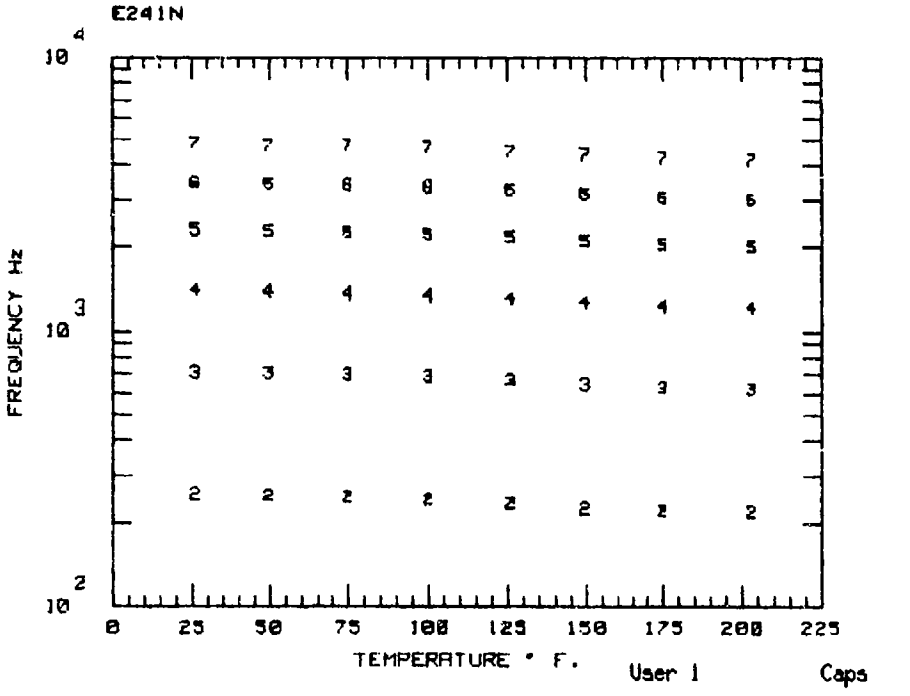
MATERIAL CODE: CM0434
MATERIAL: 2214 HI FLEX
MANUFACTURER: 3M
REMARKS:
DATE: 12 Mar 1988
ENTERED BY: BJF
BEAM MATERIAL: ALUMINUM
BEAM NUMBER: AL 7-132
BEAM TYPE: FREE LAYER ONE SIDE
BEAM LENGTH: 7 in
BEAM THICKNESS: .06014 in
BEAM DENSITY: .283 lb/cu in
DAMPING MATERIAL THICKNESS: .0985 in
DAMPING MATERIAL DENSITY: .0542 lb/cu in

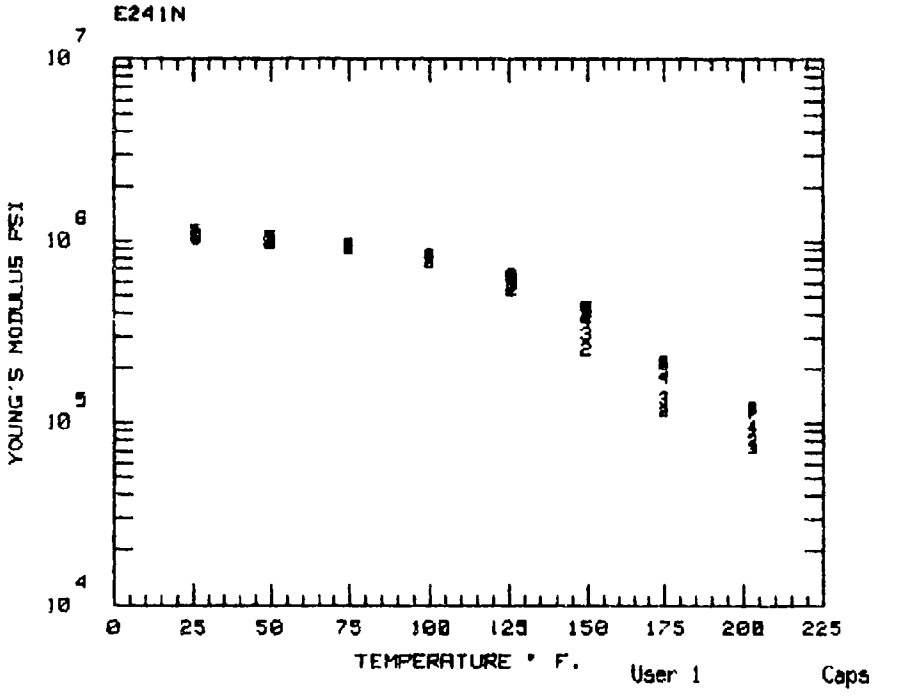
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	YOUNG'S MODULUS PSI	MATERIAL LOSS FACTOR
33	+161	4	1673.3	1729.7	.010350	4.6935E+05	.036533
34	+161	5	2777.6	2846.7	.010893	4.4484E+05	.040138
35	+161	6	4185.3	4231.1	.011802	4.0915E+05	.046849
36	+174	4	1669.7	1712.7	.009064	4.4185E+05	.033262
37	+175	3	849.0	873.9	.009184	4.5014E+05	.033104
38	+175	5	2771.3	2818.7	.009876	4.1815E+05	.037895
39	+175	6	4177.1	4190.3	.010358	3.82[illegible]6E+05	.043050
40	+176	2	300.6	311.2	.011808	4.60[illegible]0E+05	.041425
41	+190	2	300.0	307.2	.013755	4.2471E+05	.050867
42	+190	3	847.0	863.4	.010289	4.1686E+05	.039006
43	+191	4	1665.2	1692.2	.010178	4.0975E+05	.039240
44	+191	5	2764.2	2785.8	.010281	3.8697E+05	.041560
45	+191	6	4167.8	4142.4	.010203	3.5195E+05	.044975
46	+205	2	299.3	300.9	.019250	3.6562E+05	.078991
47	+205	3	845.0	847.0	.014012	3.6301E+05	.058513
48	+205	4	1661.4	1660.8	.013205	3.5709E+05	.056087
49	+205	5	2758.0	2736.4	.013196	3.3734E+05	.058857
50	+205	6	4159.7	4071.7	.012822	3.0416E+05	.062999
51	+220	6	4150.9	3977.2	.018545	2.4076E+05	.109399
52	+221	4	1657.1	1617.7	.020599	2.8557E+05	.103323
53	+221	5	2750.9	2669.5	.019669	2.7086E+05	.103541
54	+222	2	298.5	291.2	.030077	2.7678E+05	.151816
55	+222	3	842.8	823.4	.023089	2.8598E+05	.115078
56	+235	2	297.9	278.2	.044031	1.5981E+05	.348571
57	+235	5	2136.4	4280.1	.062434	2.6122E+05	.158434
58	+236	2	234.6	634.9	.032621	0.0000E+00	0.000000
59	+236	3	840.9	792.1	.039426	1.8512E+05	.279091
60	+236	4	1653.0	1561.0	.034236	1.9283E+05	.235371
61	+236	5	2744.2	2581.1	.032034	1.8374E+05	.231071
62	+236	6	4141.6	3853.2	.029626	1.5903E+05	.247046
63	+236	6	3193.3	5958.2	.069467	2.7913E+05	.159498
64	+237	4	1289.4	2844.5	.058197	2.6817E+05	.188871

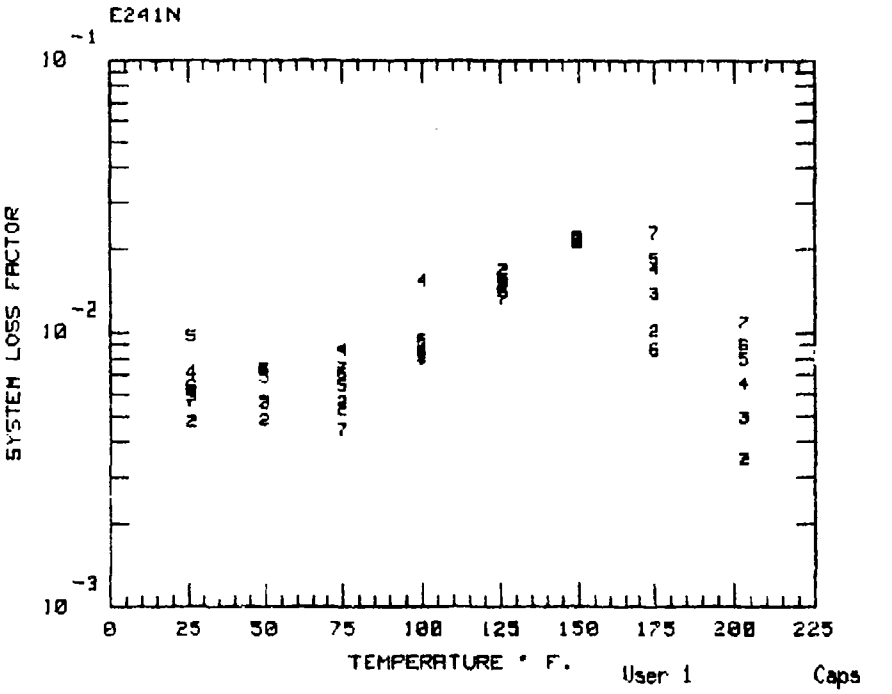
MATERIAL CODE: CM0434
MATERIAL: 2214 HI FLEX
MANUFACTURER: 3M
REMARKS:
DATE: 12 Mar 1988
ENTERED BY: BJF
BEAM MATERIAL: ALUMINUM
BEAM NUMBER: AL 7-132
BEAM TYPE: FREE LAYER ONE SIDE
BEAM LENGTH: 7 in
BEAM THICKNESS: .06014 in
BEAM DENSITY: .283 lb/cu in
DAMPING MATERIAL THICKNESS: .0985 in
DAMPING MATERIAL DENSITY: .0542 lb/cu in

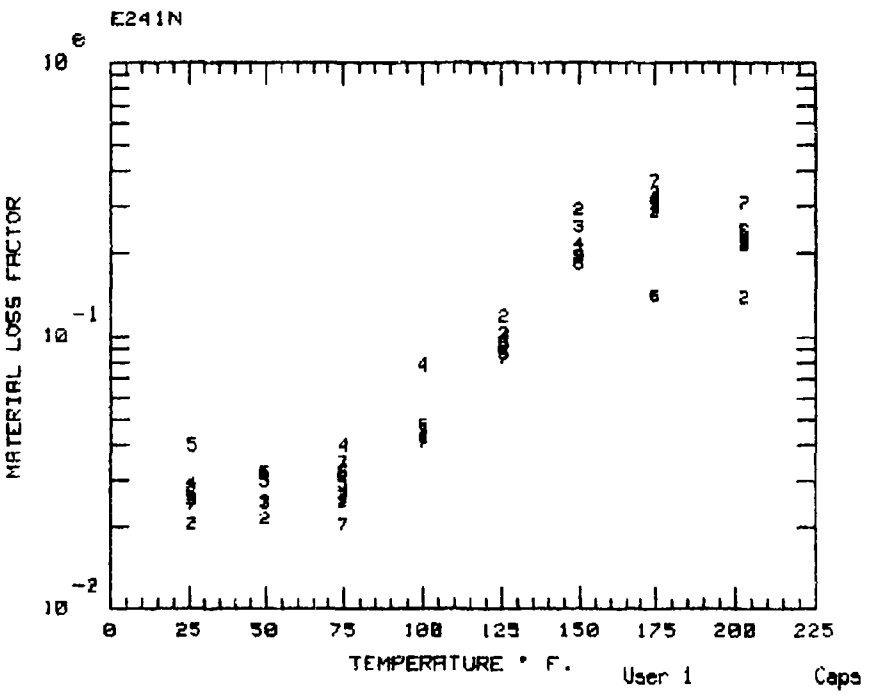
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	YOUNG'S MODULUS PSI	MATERIAL LOSS FACTOR
65	+250	3	655.4	1536.0	.102239	1.8989E+05	.446087
66	+251	6	3188.5	5474.4	.128121	1.9013E+05	.280248
67	+253	4	1287.4	2640.0	.119395	1.7013E+05	.323099
68	+254	5	2132.2	3912.0	.121929	1.6880E+05	.278629
69	+265	5	2129.8	3344.4	.220494	8.3879E+04	.491374
70	+266	2	296.5	250.0	.050199	0.0000E+00	0.000000
71	+266	3	837.0	715.7	.054457	0.0000E+00	0.000000
72	+266	4	1644.9	1421.8	.055562	0.0000E+00	0.000000
73	+266	5	2730.9	2366.1	.055316	0.0000E+00	0.000000
74	+266	6	4124.2	3551.6	.054113	0.0000E+00	0.000000
75	+267	3	654.3	1351.8	.200808	8.1084E+04	.580547
76	+268	4	1285.4	2232.1	.226955	7.5691E+04	.517976
77	+280	3	835.1	691.1	.031462	0.0000E+00	0.000000
78	+280	5	2724.7	2270.5	.042056	0.0000E+00	0.000000
79	+280	6	4116.0	3408.6	.044571	0.0000E+00	0.000000
80	+281	2	295.8	242.7	.022161	0.0000E+00	0.000000
81	+281	4	1640.8	1366.4	.037672	0.0000E+00	0.000000
82	+294	5	2123.4	2296.4	.185707	9.4958E+03	1.086688
83	+295	3	833.1	682.5	.014655	0.0000E+00	0.000000
84	+295	6	4107.3	3332.2	.025183	0.0000E+00	0.000000
85	+296	2	295.1	240.5	.009151	0.0000E+00	0.000000
86	+296	4	1636.8	1343.2	.018321	0.0000E+00	0.000000
87	+296	5	2717.6	2223.7	.021839	0.0000E+00	0.000000
88	+297	4	1281.7	1452.2	.213210	8.9059E+03	.912290

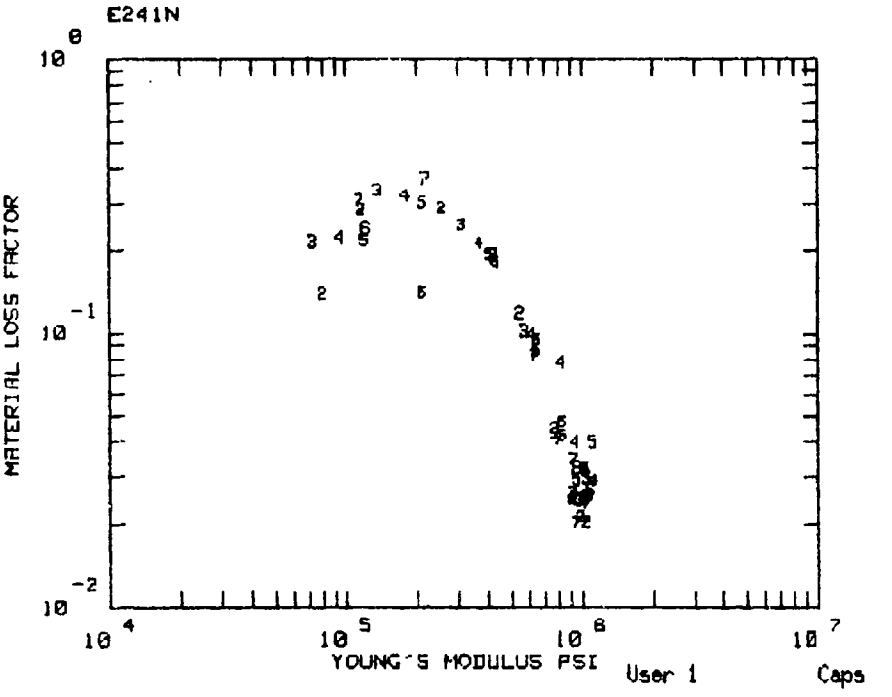

41N
TEMPERATURE DEG F (DELTA=25)
120
70
MODULUS
LOSS FACTOR
YOUNG'S MODULUS psi
FREQUENCY HERTZ
REDUCED FREQUENCY HERTZ


E241N
FREQUENCY Hz
TEMPERATURE ° F.
User 1
Caps


E241N
YOUNG'S MODULUS PSI
TEMPERATURE ° F.
User 1
Caps


E241N
SYSTEM LOSS FACTOR
TEMPERATURE ° F.
User 1
Caps


E241N
MATERIAL LOSS FACTOR
TEMPERATURE ° F.
User 1
Caps



MATERIAL CODE: E241NC
MATERIAL: E241N(350°CURE)

UNITS ARE ENGLISH
LOG(M)=LOG(ML)+(2LOG(MROM/ML))/(1+(FQROM/FR)^SLOPE)

TZERO	FQROM	MROM	SLOPE	ML
300.0	1.000E+07	2.100E+05	0.330	4.000E+04

LOG(ETA)=LOG(ETFROL)+((SH+SL)A+(SL-SH)(1-SQR(1+A^2)))C/2

TZERO	ETFROL	SL	SH	FROL	C
300.0	.310	.500	-.300	3.000E+06	1.300

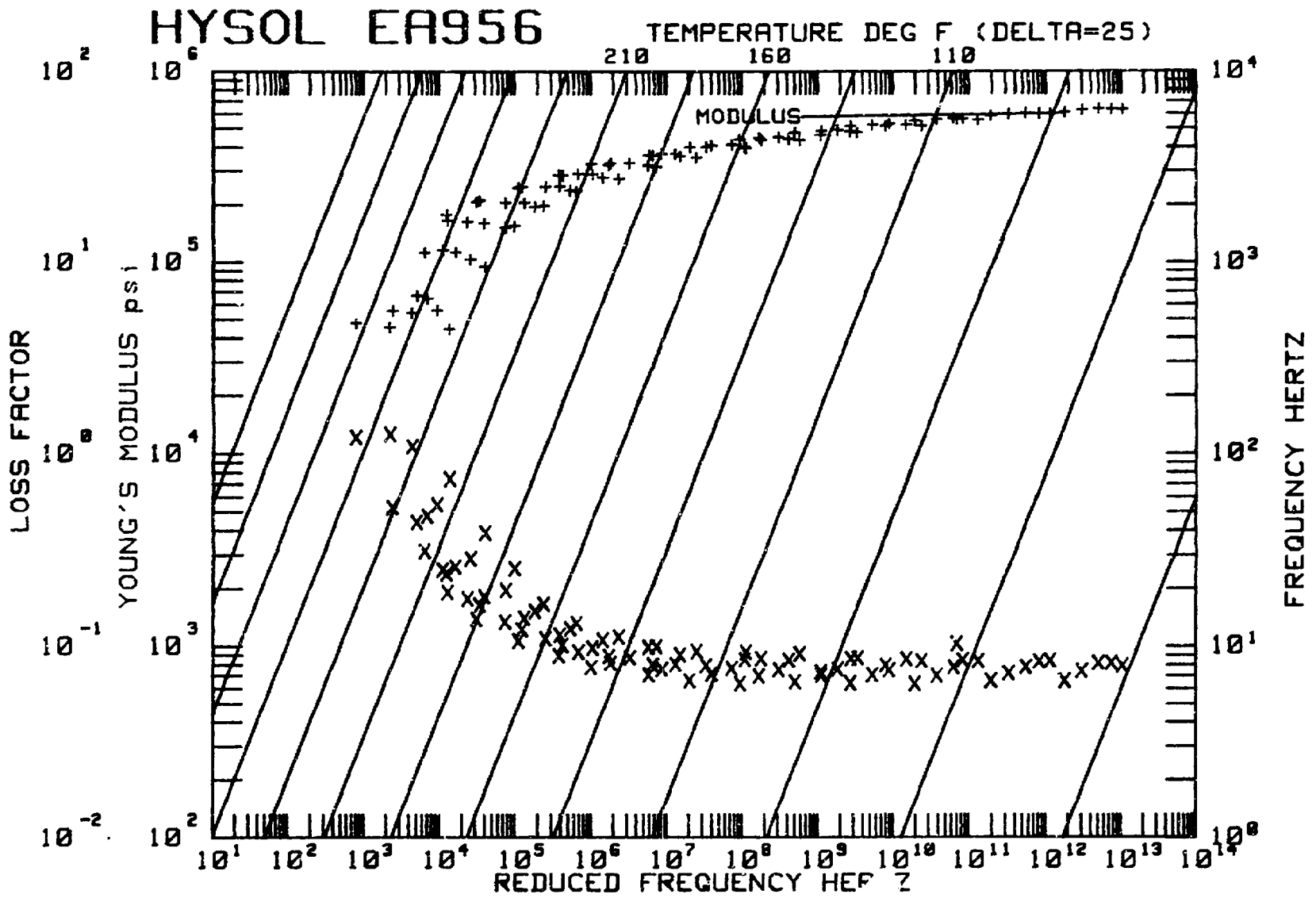
LOG(FR)=LOG(F)-12(T-T0)/(525+T-T0)
A=(LOG(FR)-LOG(FROL))/C

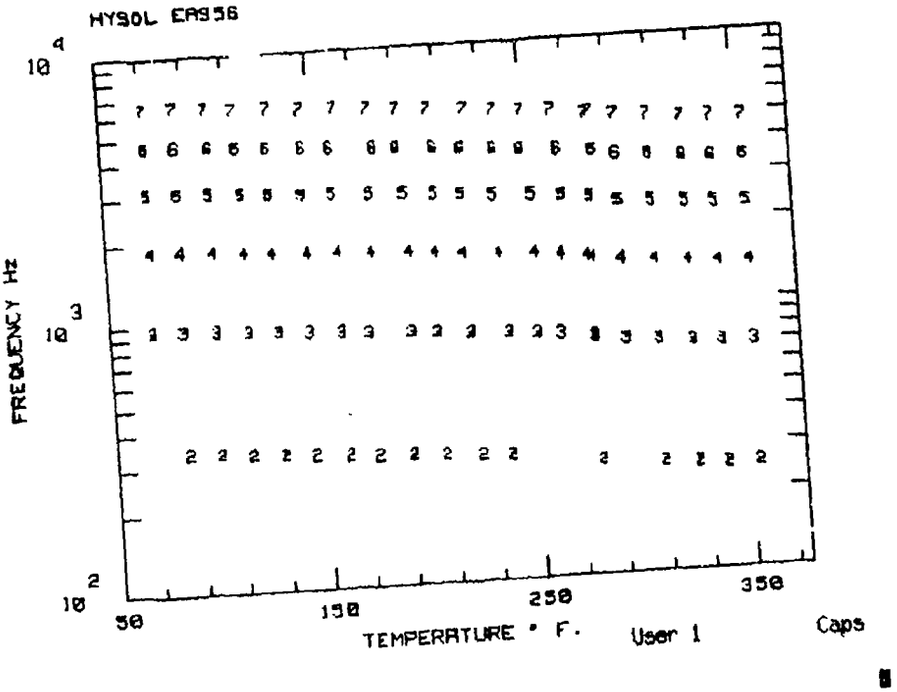
MATERIAL CODE: E241NC
MATERIAL: E241N(350°CURE)
MANUFACTURER: ALLIED RESIN CO
REMARKS: TESTED 12-3-86
DATE: 15 Dec 1986
ENTERED BY: HDW
BEAM MATERIAL: STAINLESS STEEL
BEAM NUMBER: 7-06
BEAM TYPE: FREE LAYER ONE SIDE
BEAM LENGTH: 7 in
BEAM THICKNESS: .05935 in
BEAM DENSITY: .283 lb/cu in
DAMPING MATERIAL THICKNESS: .04809 in
DAMPING MATERIAL DENSITY: .0518 lb/cu in

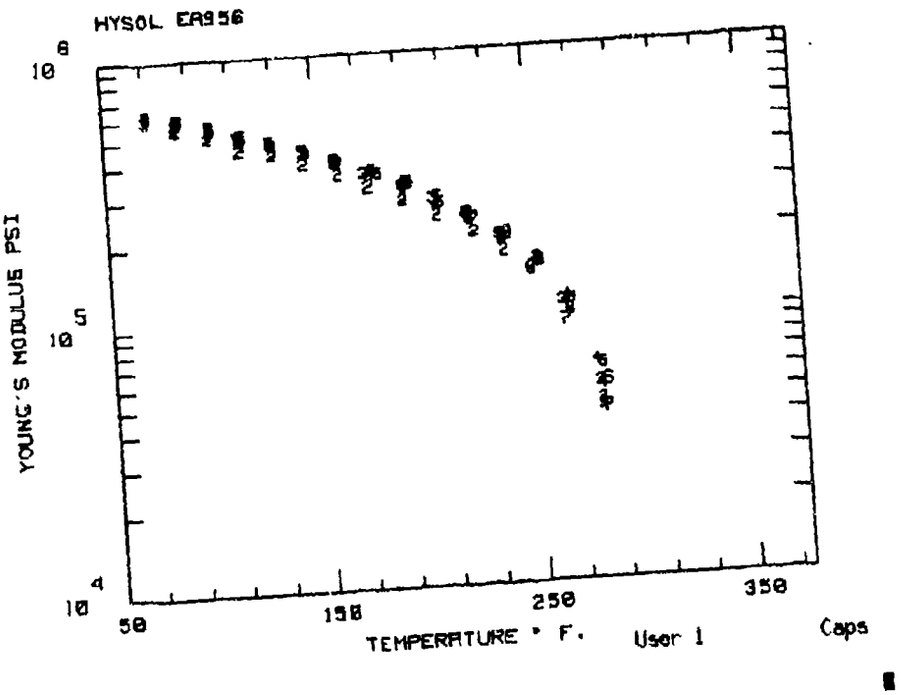
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	YOUNG'S MODULUS PSI	MATERIAL LOSS FACTOR
1	+75	2	236.9	249.9	.005280	9.1690E+05	.024904
2	+75	3	662.6	698.9	.005570	9.1390E+05	.026301
3	+75	4	1298.5	1372.9	.008590	9.3551E+05	.039872
4	+75	5	2150.2	2277.7	.006370	9.5504E+05	.029196
5	+75	6	3215.5	3406.6	.007040	9.6165E+05	.032244
6	+75	7	4489.2	4755.0	.004460	9.5543E+05	.020455
7	+75	7	4489.2	4740.3	.007380	9.2840E+05	.034568
8	+50	2	237.5	252.6	.004790	9.9161E+05	.021426
9	+50	3	664.0	705.7	.005510	9.8451E+05	.024717
10	+50	4	1301.0	1392.1	.007230	1.0446E+06	.031074
11	+50	5	2155.0	2304.5	.006860	1.0436E+06	.029583
12	+50	6	3223.6	3438.1	.007290	1.0263E+06	.031969
13	+50	7	4499.7	4791.3	.005530	1.0067E+06	.024502
14	+26	2	238.2	254.7	.004750	1.0491E+06	.020485
15	+26	3	665.4	711.2	.005840	1.0388E+06	.025281
16	+26	4	1303.4	1405.9	.007080	1.1216E+06	.029020
17	+26	5	2159.6	2327.5	.009660	1.1190E+06	.039783
18	+26	6	3231.4	3467.9	.006370	1.0880E+06	.026889
19	+26	7	4509.7	4828.6	.005630	1.0611E+06	.024100
20	+100	2	236.2	245.0	.008410	7.7118E+05	.045009
21	+100	3	661.2	686.4	.008040	7.7698E+05	.042770
22	+100	4	1296.0	1352.6	.015380	8.2135E+05	.078448
23	+100	5	2145.4	2240.6	.008350	8.2925E+05	.042373
24	+100	6	3207.5	3348.7	.009320	8.3088E+05	.047418
25	+100	7	4478.8	4663.9	.007870	8.0564E+05	.040860
26	+126	2	235.5	237.7	.016920	5.4647E+05	.118361
27	+126	3	659.7	668.0	.015120	5.7437E+05	.101924
28	+126	4	1293.4	1316.0	.015420	6.1246E+05	.098728
29	+126	5	2140.4	2186.3	.014040	6.4435E+05	.096443
30	+126	6	3199.1	3269.3	.015540	6.5138E+05	.095215
31	+126	7	4467.9	4560.1	.013310	6.3862E+05	.082600
32	+150	2	234.8	227.7	.021340	2.5463E+05	.290441

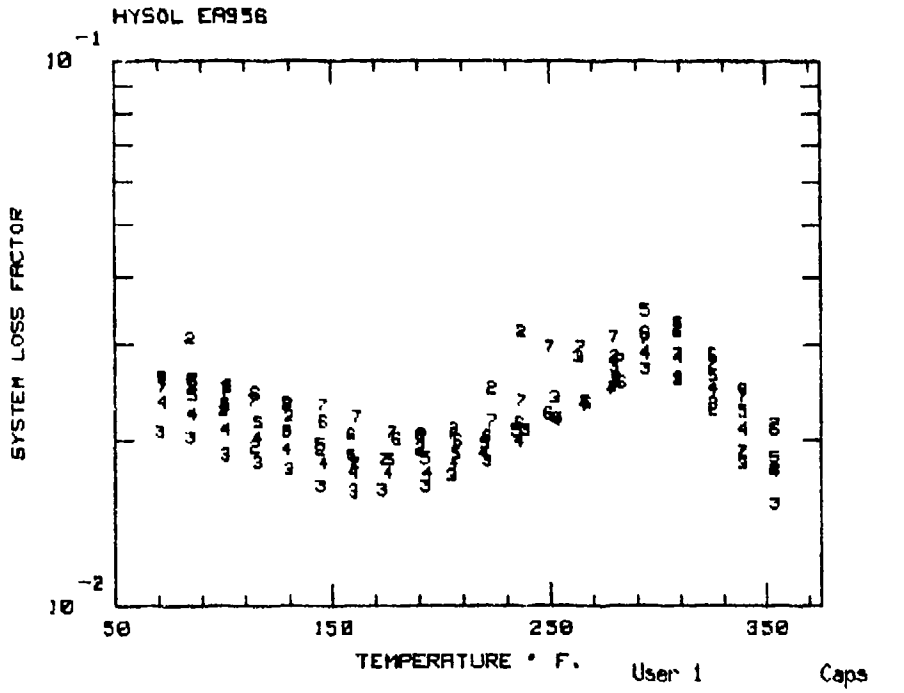
MATERIAL CODE: E241NC
MATERIAL: E241N(350°CURE)
MANUFACTURER: ALLIED RESIN CO
REMARKS: TESTED 12-3-86
DATE: 15 Dec 1986
ENTERED BY: HDW
BEAM MATERIAL: STAINLESS STEEL
BEAM NUMBER: 7-06
BEAM TYPE: FREE LAYER ONE SIDE
BEAM LENGTH: 7 in
BEAM THICKNESS: .05935 in
BEAM DENSITY: .283 lb/cu in
DAMPING MATERIAL THICKNESS: .04809 in
DAMPING MATERIAL DENSITY: .0518 lb/cu in

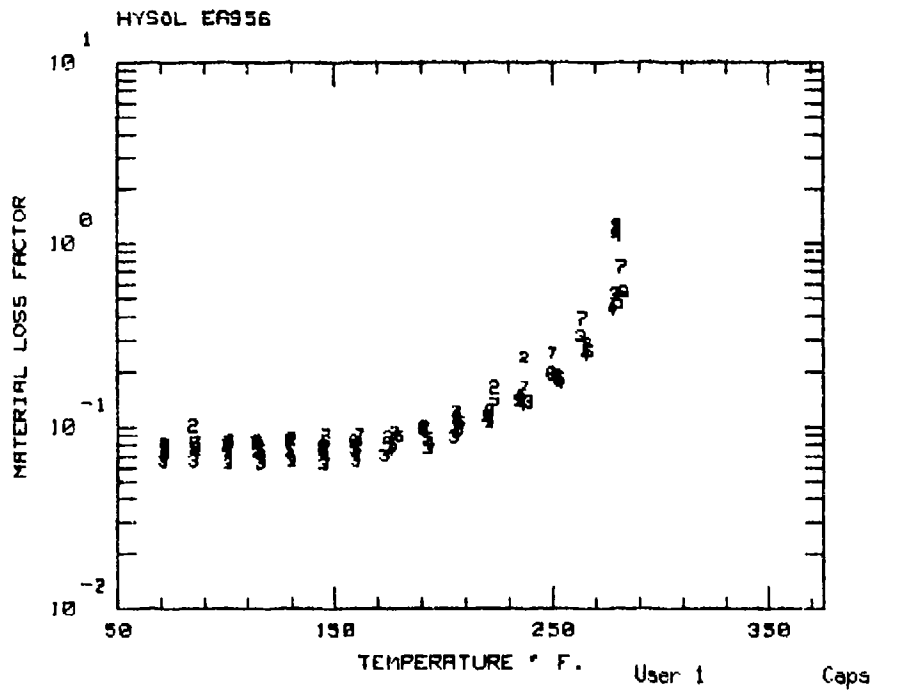
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	YOUNG'S MODULUS PSI	MATERIAL LOSS FACTOR
33	+150	3	658.3	643.4	.022070	3.1014E+05	.251920
34	+150	4	1290.9	1271.9	.021940	3.6805E+05	.215447
35	+150	5	2135.8	2115.3	.021650	4.0668E+05	.195158
36	+150	6	3191.3	3171.6	.021470	4.3382E+05	.183712
37	+150	7	4457.9	4424.0	.022220	4.2176E+05	.194215
38	+175	2	234.1	222.5	.010110	1.1649E+05	.284896
39	+175	3	656.9	626.1	.013860	1.3702E+05	.335803
40	+175	4	1288.4	1235.7	.017080	1.7890E+05	.322288
41	+175	5	2131.0	2053.2	.018650	2.1028E+05	.303014
42	+175	6	3183.3	3066.7	.008640	2.1026E+05	.140871
43	+175	7	4447.4	4289.1	.023300	2.1680E+05	.368189
44	+203	2	233.3	220.5	.003470	7.9951E+04	.139705
45	+203	3	655.2	618.5	.004920	7.2816E+04	.218129
46	+203	4	1285.6	1217.5	.006500	9.4384E+04	.224614
47	+203	5	2125.6	2020.8	.007980	1.1964E+05	.219624
48	+203	6	3174.2	3018.4	.008980	1.2158E+05	.244083
49	+203	7	4435.7	4213.7	.010750	1.1456E+05	.308509

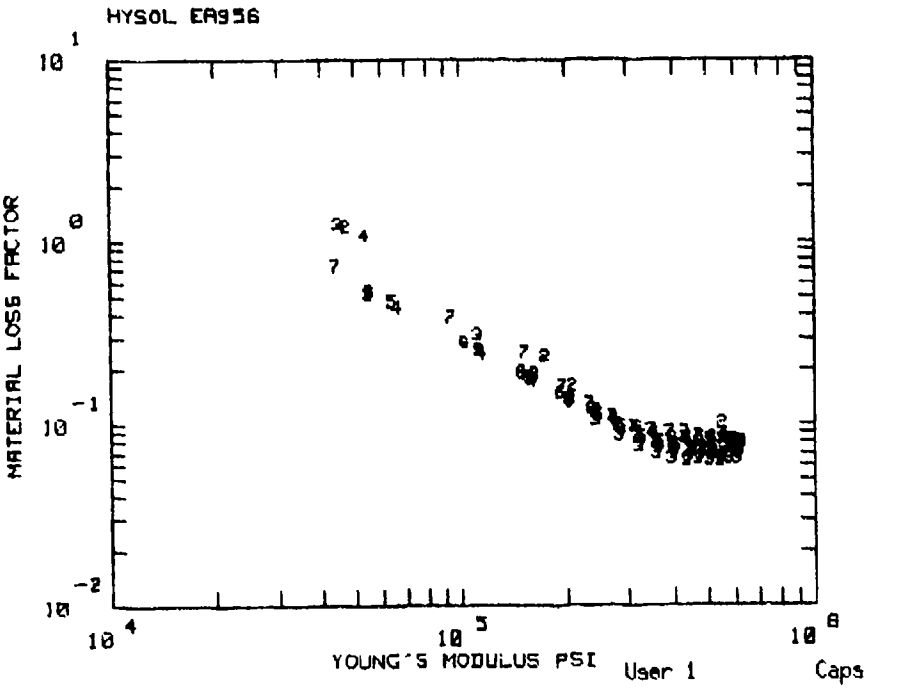

HYSOL EA956
TEMPERATURE DEG F (DELTA=25)
210
160
110
MODULUS
LOSS FACTOR
YOUNG'S MODULUS psi
FREQUENCY HERTZ
REDUCED FREQUENCY HERTZ


HYSOL EA956
FREQUENCY Hz
10^4
10^3
10^2
50
150
250
350
TEMPERATURE ° F.
User 1
Caps


HYSOL EA956
YOUNG'S MODULUS PSI
10^6
10^5
10^4
50
150
250
350
TEMPERATURE ° F.
User 1
Caps


HYSOL EA956
SYSTEM LOSS FACTOR
10^-1
10^-2
50
150
250
350
TEMPERATURE ° F.
User 1
Caps


HYSOL EA956
MATERIAL LOSS FACTOR
10^1
10^0
10^-1
10^-2
50
150
250
350
TEMPERATURE ° F.
User 1
Caps



MATERIAL CODE: ED0448
MATERIAL: HYSOL EA956

UNITS ARE ENGLISH
LOG(M)=LOG(ML)+(2LOG(MROM/ML))/(1+(FQROM/FR)^SLOPE)

TZERO	FQROM	MROM	SLOPE	ML
300.0	0.000E+00	0.000E+00	0.000	0.000E+00

LOG(ETA)=LOG(ETFROL)+((SH+SL)A+(SL-SH)(1-SQR(1+A^2)))C/2

TZERO	ETFROL	SL	SH	FROL	C
300.0	0.000	0.000	0.000	0.000E+00	0.000

LOG(FR)=LOG(F)-12(T-T0)/(525+T-T0)
A=(LOG(FR)-LOG(FROL))/C

MATERIAL CODE: ED0448
MATERIAL: HYSOL EA956
MANUFACTURER: DEXTER HYSOL
REMARKS:
DATE: 23 Mar 1988
ENTERED BY: SEO
BEAM MATERIAL: ALUMINUM
BEAM NUMBER: AL-080-8
BEAM TYPE: FREE LAYER ONE SIDE
BEAM LENGTH: 7 in
BEAM THICKNESS: .08 in
BEAM DENSITY: .11 lb/cu in
DAMPING MATERIAL THICKNESS: .068 in
DAMPING MATERIAL DENSITY: .0416 lb/cu in

INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	YOUNG'S MODULUS PSI	MATERIAL LOSS FACTOR
1	+71	3	899.7	958.8	.020752	6.0299E+05	.064939
2	+72	4	1774.1	1894.3	.023543	6.1786E+05	.073152
3	+72	5	2942.9	3145.0	.026044	6.2560E+05	.080659
4	+72	6	4399.0	4694.2	.025962	6.2305E+05	.080838
5	+72	7	6142.6	6554.5	.025087	6.2015E+05	.078135
6	+85	2	321.7	338.0	.030739	5.5136E+05	.101707
7	+85	3	897.8	950.2	.020248	5.7483E+05	.065046
8	+86	4	1769.9	1876.3	.022355	5.8791E+05	.071356
9	+86	5	2935.8	3115.3	.024193	5.9550E+05	.076946
10	+86	6	4389.2	4648.3	.025673	5.9115E+05	.082280
11	+86	7	6129.5	6488.5	.025853	5.8716E+05	.082994
12	+100	2	321.0	333.4	.022636	5.0809E+05	.078638
13	+101	3	895.6	939.8	.018853	5.4087E+05	.062685
14	+101	4	1765.4	1854.4	.020926	5.5093E+05	.069290
15	+101	5	2928.3	3078.5	.023265	5.5777E+05	.076772
16	+101	7	6115.4	6408.6	.024762	5.4710E+05	.082795
17	+102	6	4378.0	4596.1	.025175	5.5559E+05	.083558
18	+114	7	6103.1	6330.2	.023679	5.0782E+05	.082793
19	+115	2	320.3	327.8	.019485	4.5546E+05	.072498
20	+115	6	4368.9	4537.8	.024349	5.1457E+05	.084603
21	+116	3	893.5	929.1	.018247	5.0599E+05	.063090
22	+116	4	1760.9	1832.1	.020234	5.1382E+05	.069782
23	+116	5	2920.7	3041.2	.021531	5.2016E+05	.073994
24	+129	4	1757.0	1810.3	.019246	4.7767E+05	.069378
25	+129	5	2914.2	3003.8	.020764	4.8222E+05	.074716
26	+129	6	4359.1	4479.2	.023327	4.7448E+05	.085191
27	+130	2	319.6	324.8	.022094	4.2953E+05	.085258
28	+130	3	891.6	917.9	.017691	4.6941E+05	.064034
29	+130	7	6088.1	6248.8	.023315	4.6876E+05	.085611
30	+145	2	318.9	320.9	.019223	3.9578E+05	.078240
31	+145	3	889.5	906.4	.016480	4.3307E+05	.062740
32	+145	5	2906.2	2964.8	.019632	4.4441E+05	.074298

MATERIAL CODE: ED0448
MATERIAL: HYSOL EA956
MANUFACTURER: DEXTER HYSOL
REMARKS:
DATE: 23 Mar 1988
ENTERED BY: SEO
BEAM MATERIAL: ALUMINUM
BEAM NUMBER: AL-080-8
BEAM TYPE: FREE LAYER ONE SIDE
BEAM LENGTH: 7 in
BEAM THICKNESS: .08 in
BEAM DENSITY: .11 lb/cu in
DAMPING MATERIAL THICKNESS: .068 in
DAMPING MATERIAL DENSITY: .0416 lb/cu in

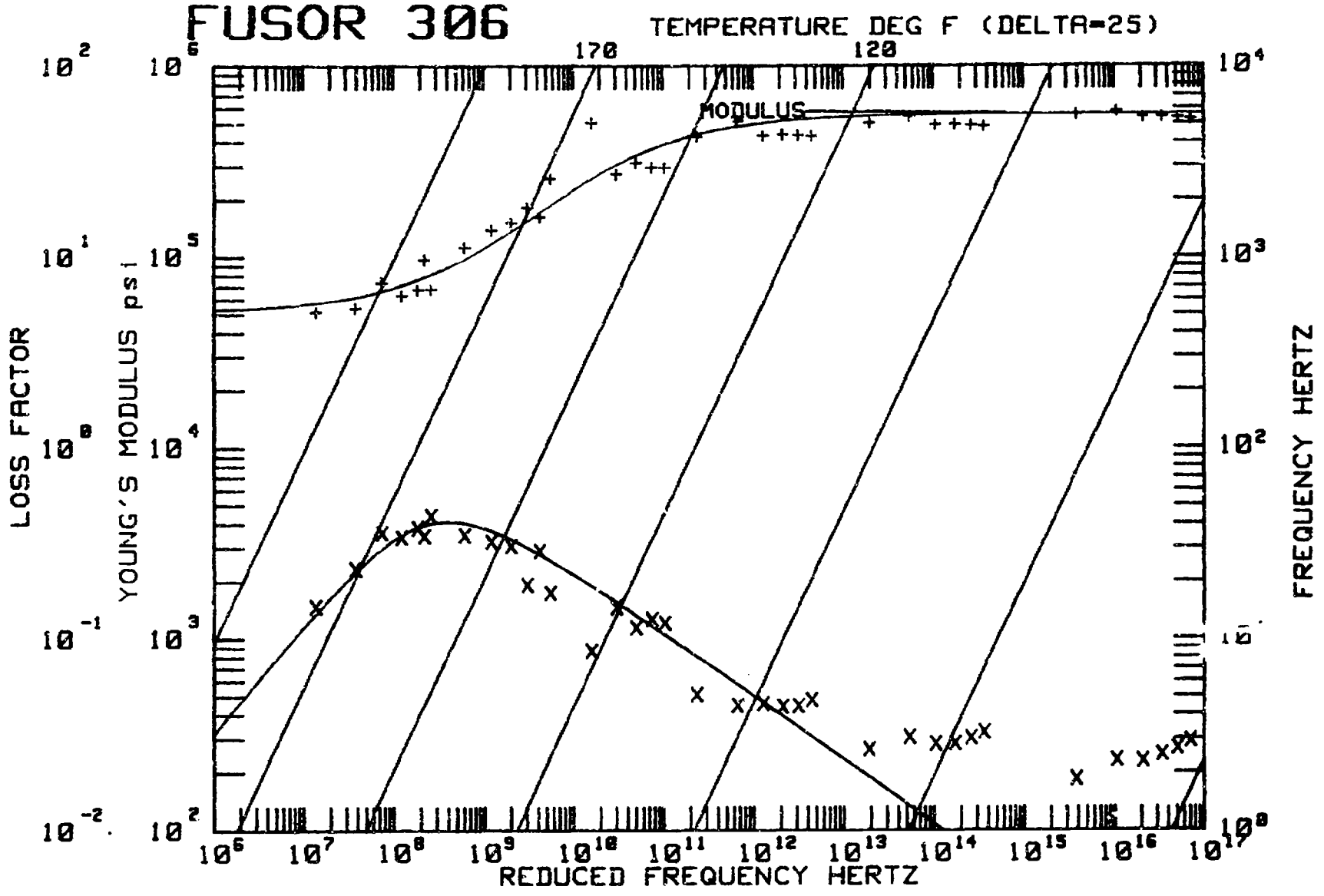
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	YOUNG'S MODULUS PSI	MATERIAL LOSS FACTOR
33	+146	4	1751.9	1787.0	.018156	4.4084E+05	.068760
34	+146	6	4347.2	4420.0	.021671	4.3588E+05	.083457
35	+146	7	6073.0	6165.7	.023239	4.2959E+05	.090182
36	+159	5	2899.1	2924.8	.018781	4.0540E+05	.075429
37	+159	6	4338.1	4360.2	.020522	3.9607E+05	.084182
38	+160	3	887.5	894.4	.016114	3.9530E+05	.065095
39	+160	4	1747.7	1763.0	.017506	4.0223E+05	.070351
40	+161	2	318.1	316.5	.018183	3.5713E+05	.079326
41	+162	7	6058.0	6080.1	.022177	3.8985E+05	.091722
42	+173	3	885.7	882.8	.016211	3.5903E+05	.069884
43	+175	2	317.5	311.9	.018497	3.1804E+05	.087564
44	+176	4	1742.9	1738.8	.017382	3.6493E+05	.074513
45	+177	5	2890.1	2881.7	.018429	3.6554E+05	.079257
46	+178	7	6042.9	5987.9	.020726	3.4749E+05	.092730
47	+180	6	4323.4	4292.5	.020146	3.5442E+05	.089007
48	+191	2	316.7	307.5	.019310	2.8069E+05	.100084
49	+191	6	4315.7	4234.5	.020439	3.1686E+05	.097783
50	+192	7	6029.7	5906.0	.020313	3.1061E+05	.098405
51	+193	3	882.9	869.9	.016467	3.2172E+05	.076527
52	+193	5	2882.0	2839.0	.018522	3.2605E+05	.086203
53	+194	4	1737.5	1712.3	.017397	3.2524E+05	.080703
54	+205	3	881.2	857.0	.017240	2.8227E+05	.088127
55	+206	2	316.0	303.0	.020961	2.4425E+05	.120634
56	+206	4	1733.9	1687.1	.018135	2.8616E+05	.092303
57	+206	7	6016.5	5814.3	.020566	2.6958E+05	.110608
58	+207	5	2875.0	2795.1	.018888	2.8539E+05	.096786
59	+208	6	4303.8	4163.9	.019938	2.7345E+05	.106219
60	+219	4	1729.9	1659.9	.018912	2.4494E+05	.108212
61	+220	5	2868.5	2751.5	.019710	2.4559E+05	.113085
62	+221	3	879.0	843.0	.018309	2.4147E+05	.105235
63	+221	6	4294.7	4100.5	.020366	2.3454E+05	.121999
64	+223	2	315.2	298.5	.024966	2.0830E+05	.162616

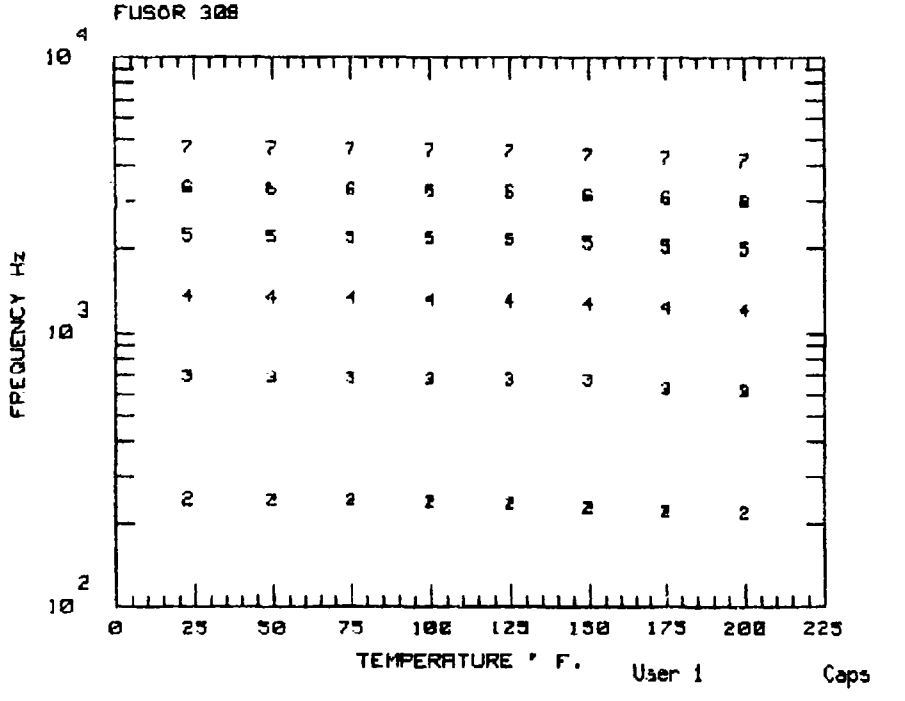
MATERIAL CODE: ED0448
MATERIAL: HYSOL EA956
MANUFACTURER: DEXTER HYSOL
REMARKS:
DATE: 23 Mar 1988
ENTERED BY: SEO
BEAM MATERIAL: ALUMINUM
BEAM NUMBER: AL-080-8
BEAM TYPE: FREE LAYER ONE SIDE
BEAM LENGTH: 7 in
BEAM THICKNESS: .08 in
BEAM DENSITY: .11 lb/cu in
DAMPING MATERIAL THICKNESS: .068 in
DAMPING MATERIAL DENSITY: .0416 lb/cu in

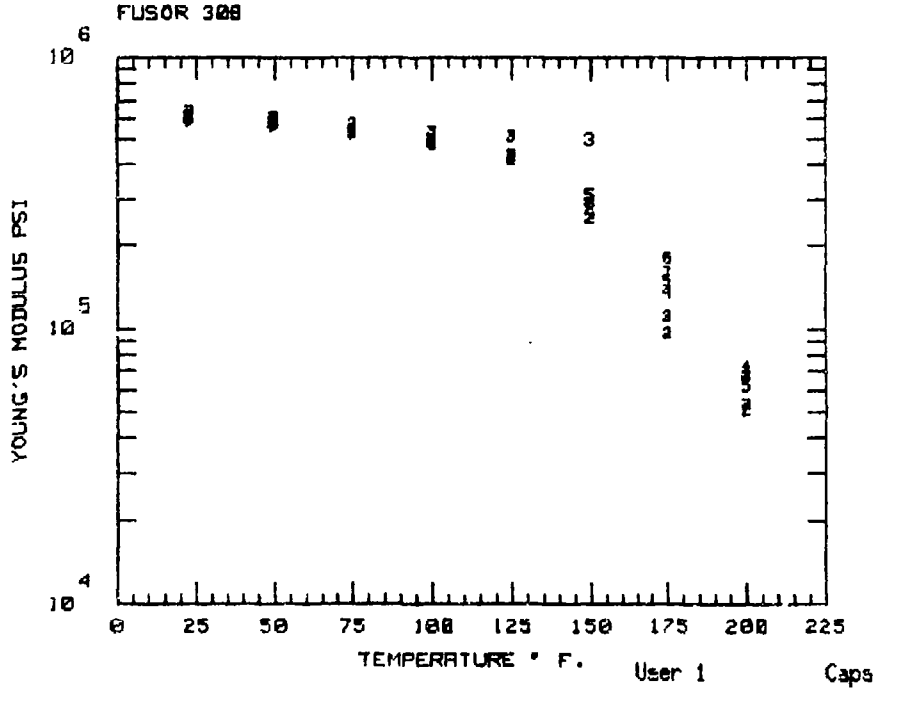
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	YOUNG'S MODULUS PSI	MATERIAL LOSS FACTOR
65	+223	7	6000.6	5726.0	.021650	2.3223E+05	.130400
66	+235	5	2860.9	2703.1	.020788	2.0274E+05	.138580
67	+236	4	1724.8	1630.4	.019949	2.0256E+05	.132345
68	+236	6	4284.2	4030.2	.021486	1.9261E+05	.150496
69	+237	2	314.5	294.3	.031780	1.7559E+05	.237613
70	+237	7	5987.4	5638.4	.023661	1.9501E+05	.163680
71	+239	3	876.6	829.6	.020903	2.0433E+05	.136762
72	+249	6	4275.2	3957.5	.022397	1.4937E+05	.193800
73	+250	7	5975.1	5538.6	.029766	1.5251E+05	.252454
74	+252	3	874.8	815.1	.024021	1.6279E+05	.189257
75	+253	4	1719.7	1600.3	.021745	1.6028E+05	.174556
76	+253	5	2851.9	2650.1	.021962	1.5760E+05	.179819
77	+263	3	873.2	797.4	.028564	1.1165E+05	.311545
78	+264	7	5962.0	5399.8	.029683	9.3769E+04	.385786
79	+265	4	1716.1	1568.7	.023262	1.1482E+05	.248748
80	+266	6	4263.3	3874.9	.023677	1.0253E+05	.284141
81	+267	5	2844.8	2597.0	.023430	1.1217E+05	.257102
82	+278	4	1712.2	1533.8	.024791	6.5997E+04	.437624
83	+279	3	871.0	776.7	.025078	5.4915E+04	.522948
84	+280	2	295.8	269.7	.028423	4.7347E+04	1.208756
85	+280	3	835.1	760.8	.027250	4.4848E+04	1.253522
86	+280	4	1641.1	1498.1	.028071	5.3635E+04	1.080651
87	+280	7	5781.5	5185.7	.031045	0.0000E+00	0.000000
88	+281	5	2837.8	2539.3	.025742	6.3788E+04	.471366
89	+282	7	5945.0	5273.5	.028007	4.3981E+04	.734612
90	+283	6	4251.4	3789.5	.025564	5.5348E+04	.539707
91	+294	3	833.3	743.4	.027043	0.0000E+00	0.000000
92	+294	4	1637.3	1462.7	.028893	0.0000E+00	0.000000
93	+294	5	2718.5	2413.8	.034640	0.0000E+00	0.000000
94	+294	6	4107.9	3622.9	.031449	0.0000E+00	0.000000
95	+294	7	5770.3	5066.3	.030703	0.0000E+00	0.000000
96	+309	2	294.5	258.4	.025852	0.0000E+00	0.000000

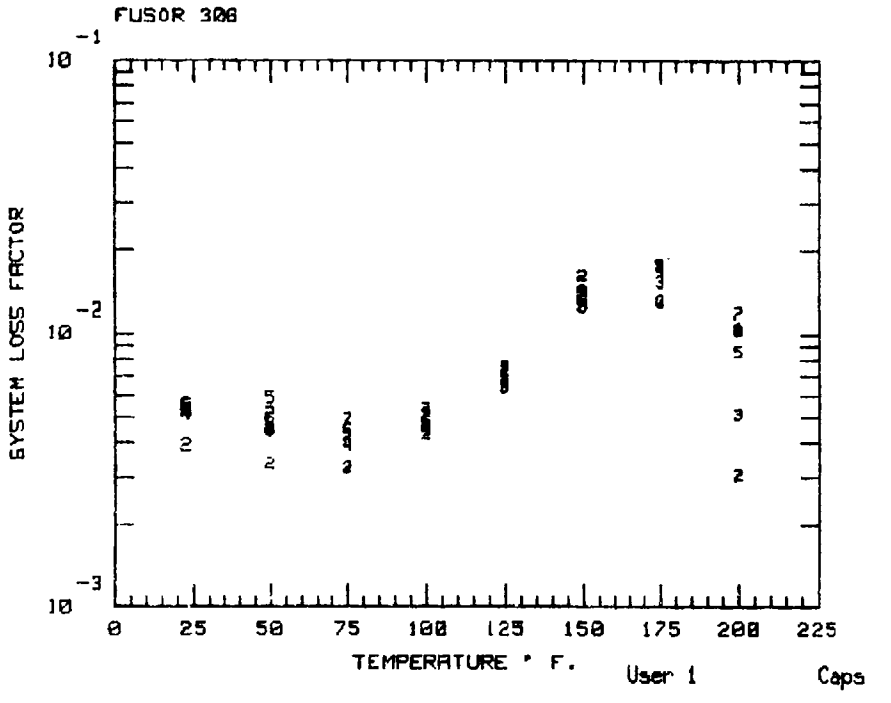
MATERIAL CODE: ED0448
MATERIAL: HYSOL EA956
MANUFACTURER: DEXTER HYSOL
REMARKS:
DATE: 23 Mar 1988
ENTERED BY: SEO
BEAM MATERIAL: ALUMINUM
BEAM NUMBER: AL-080-8
BEAM TYPE: FREE LAYER ONE SIDE
BEAM LENGTH: 7 in
BEAM THICKNESS: .08 in
BEAM DENSITY: .11 lb/cu in
DAMPING MATERIAL THICKNESS: .068 in
DAMPING MATERIAL DENSITY: .0416 lb/cu in

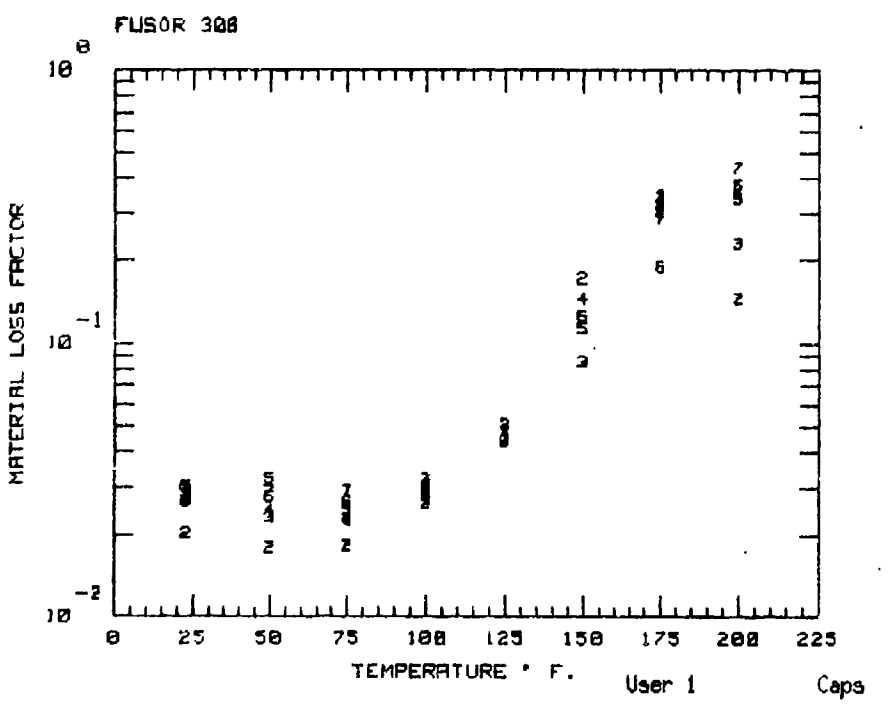
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	YOUNG'S MODULUS PSI	MATERIAL LOSS FACTOR
97	+309	3	831.3	728.9	.026079	0.0000E+00	0.000000
98	+309	4	1633.3	1432.3	.028435	0.0000E+00	0.000000
99	+309	5	2711.8	2365.1	.032954	0.0000E+00	0.000000
100	+309	6	4099.1	3545.8	.031771	0.0000E+00	0.000000
101	+309	7	5758.4	4964.7	.028822	0.0000E+00	0.000000
102	+325	2	293.8	253.7	.022758	0.0000E+00	0.000000
103	+325	3	829.2	715.1	.023319	0.0000E+00	0.000000
104	+325	4	1629.0	1403.7	.024840	0.0000E+00	0.000000
105	+325	5	2704.7	2326.5	.026275	0.0000E+00	0.000000
106	+325	6	4089.8	3473.1	.028698	0.0000E+00	0.000000
107	+325	7	5745.7	4865.5	.027652	0.0000E+00	0.000000
108	+339	2	293.1	250.4	.019107	0.0000E+00	0.000000
109	+339	3	827.3	705.3	.018152	0.0000E+00	0.000000
110	+339	4	1625.2	1383.6	.020964	0.0000E+00	0.000000
111	+339	5	2698.5	2291.7	.022573	0.0000E+00	0.000000
112	+339	6	4081.7	3423.1	.024836	0.0000E+00	0.000000
113	+339	7	5734.5	4794.8	.024109	0.0000E+00	0.000000
114	+354	2	292.4	247.9	.017669	0.0000E+00	0.000000
115	+354	3	825.3	698.1	.015290	0.0000E+00	0.000000
116	+354	4	1621.1	1367.9	.017572	0.0000E+00	0.000000
117	+354	5	2691.8	2265.4	.018632	0.0000E+00	0.000000
118	+354	6	4072.9	3382.9	.020947	0.0000E+00	0.000000
119	+354	7	5722.6	4734.6	.021449	0.0000E+00	0.000000

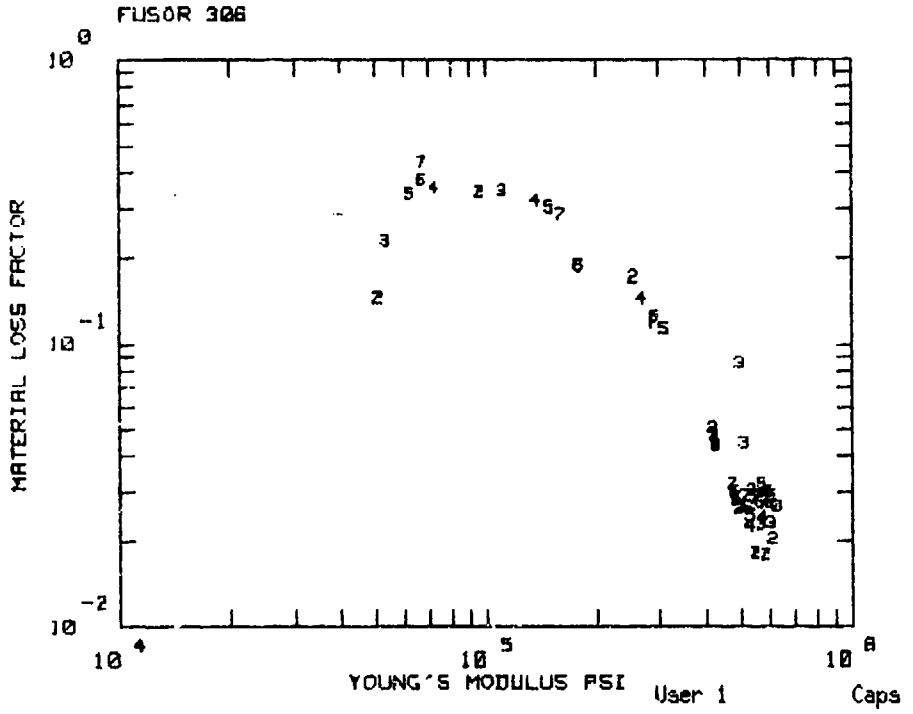

FUSOR 306
TEMPERATURE DEG F (DELTA=25)
170
120
MODULUS
LOSS FACTOR
YOUNG'S MODULUS psi
FREQUENCY HERTZ
REDUCED FREQUENCY HERTZ


FUSOR 308
FREQUENCY Hz
10^4
10^3
10^2
0 25 50 75 100 125 150 175 200 225
TEMPERATURE ° F.
User 1
Caps


FUSOR 308
YOUNG'S MODULUS PSI
10^6
10^5
10^4
0 25 50 75 100 125 150 175 200 225
TEMPERATURE ° F.
User 1
Caps


FUSOR 308
SYSTEM LOSS FACTOR
10^-1
10^-2
10^-3
0
25
50
75
100
125
150
175
200
225
TEMPERATURE ° F.
User 1
Caps


FUSOR 308
MATERIAL LOSS FACTOR
10^0
10^-1
10^-2
0
25
50
75
100
125
150
175
200
225
TEMPERATURE ° F.
User 1
Caps



MATERIAL CODE: FUS306
MATERIAL: FUSOR306/350°CR

UNITS ARE ENGLISH

LOG(M)=LOG(ML)+(2LOG(MROM/ML))/(1+(FQROM/FR)^SLOPE)

TZERO	FQROM	MROM	SLOPE	ML
350.0	4.001E+09	1.700E+05	0.530	5.146E+04

LOG(ETA)=LOG(ETFROL)+((SH+SL)A+(SL-SH)(1-SQR(1+A^2)))C/2

TZERO	ETFROL	SL	SH	FROL	C
350.0	.300	.600	-.340	2.300E+08	.800

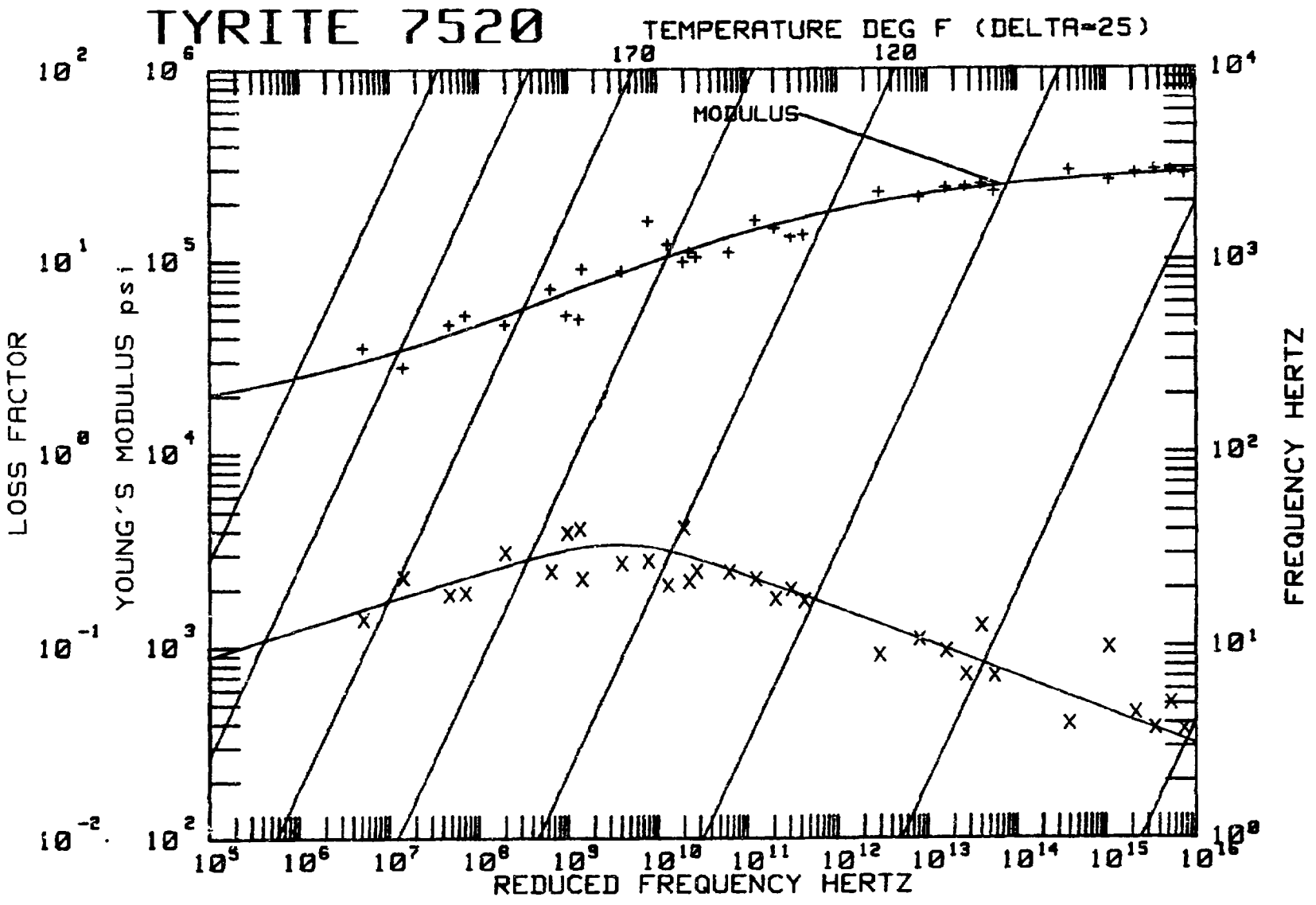
LOG(FR)=LOG(F)-12(T-T0)/(525+T-T0)
A=(LOG(FR)-LOG(FROL))/C

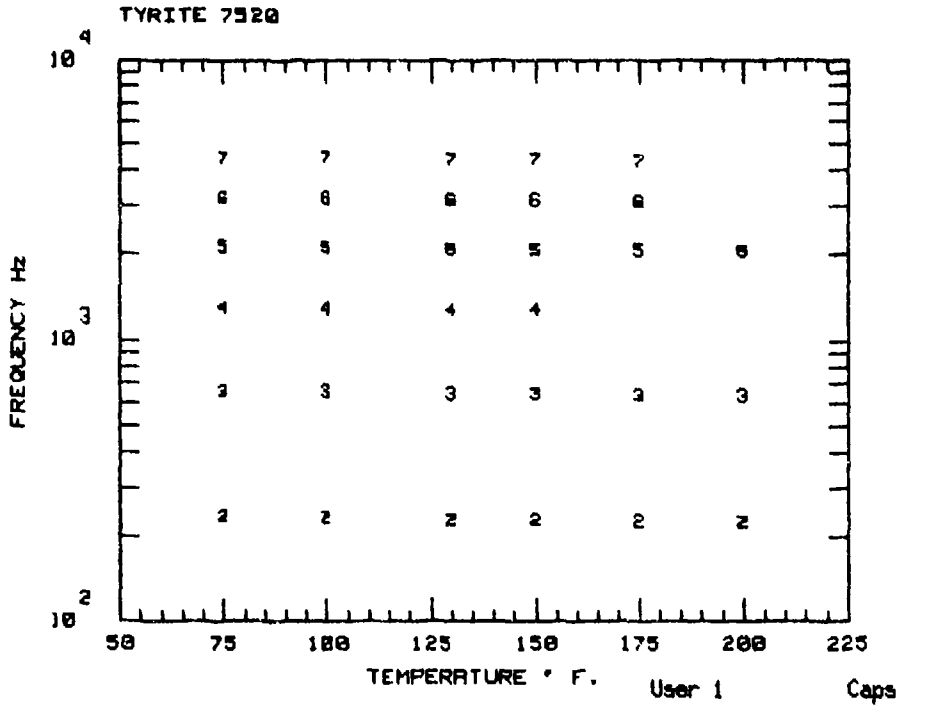
MATERIAL CODE: FUS306
MATERIAL: FUSOR306/350'CR
MANUFACTURER: LORD
REMARKS: NONE
DATE: 22 Dec 1986
ENTERED BY: HDW
BEAM MATERIAL: STAINLESS STEEL
BEAM NUMBER: 7-47
BEAM TYPE: FREE LAYER ONE SIDE
BEAM LENGTH: 7 in
BEAM THICKNESS: .0584 in
BEAM DENSITY: .283 lb/cu in
DAMPING MATERIAL THICKNESS: .0553 in
DAMPING MATERIAL DENSITY: .047 lb/cu in

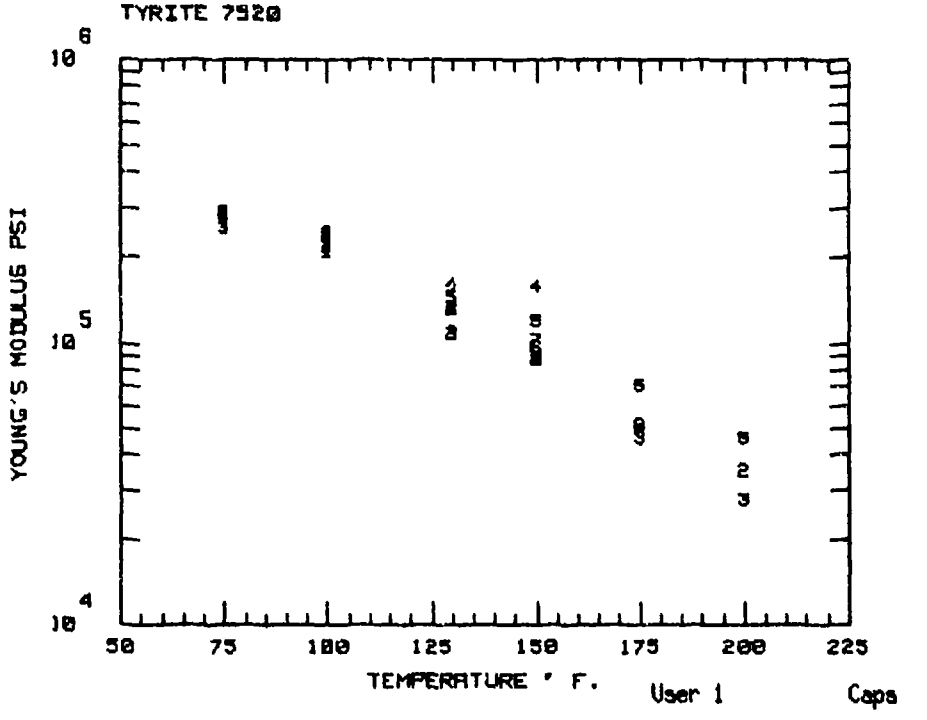
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	YOUNG'S MODULUS PSI	MATERIAL LOSS FACTOR
1	+23	2	238.7	247.4	.003920	6.1119E+05	.020436
2	+23	3	667.7	694.2	.005260	6.3100E+05	.026711
3	+23	4	1313.0	1358.3	.005050	6.0291E+05	.026704
4	+23	5	2168.9	2245.7	.005480	6.0762E+05	.028771
5	+23	6	3251.0	3355.6	.005570	5.9401E+05	.030006
6	+23	7	4542.6	4683.1	.005250	5.8457E+05	.028573
7	+50	2	238.0	245.7	.003340	5.8333E+05	.017972
8	+50	3	665.8	689.6	.004440	6.0320E+05	.023238
9	+50	4	1309.1	1348.1	.004440	5.7055E+05	.024397
10	+50	5	2162.4	2226.9	.005830	5.6981E+05	.032030
11	+50	6	3240.5	3330.2	.004920	5.6256E+05	.027519
12	+50	7	4529.5	4649.6	.005100	5.5420E+05	.028814
13	+75	2	237.4	243.7	.003240	5.4554E+05	.018297
14	+75	3	664.0	684.3	.004210	5.6896E+05	.022962
15	+75	4	1305.6	1336.5	.003930	5.3082E+05	.022763
16	+75	5	2156.5	2207.9	.004260	5.3070E+05	.024648
17	+75	6	3230.8	3301.5	.004490	5.2413E+05	.026438
18	+75	7	4517.3	4610.9	.004860	5.1612E+05	.028935
19	+100	2	236.7	241.1	.004290	4.9472E+05	.026078
20	+100	3	662.2	679.1	.005320	5.3528E+05	.030315
21	+100	4	1302.0	1323.7	.004520	4.8608E+05	.027973
22	+100	5	2150.5	2187.3	.004570	4.8785E+05	.028162
23	+100	6	3221.0	3270.3	.004770	4.8145E+05	.029929
24	+100	7	4505.2	4569.6	.005060	4.7507E+05	.032070
25	+125	2	236.1	237.6	.007320	4.2113E+05	.050533
26	+125	3	660.4	674.7	.007530	5.0947E+05	.044437
27	+125	4	1298.4	1307.6	.006640	4.2728E+05	.045462
28	+125	5	2144.5	2161.2	.006430	4.3060E+05	.043681
29	+125	6	3211.3	3232.9	.006400	4.2812E+05	.043996
30	+125	7	4493.1	4519.6	.006820	4.2326E+05	.047319
31	+150	2	235.5	230.1	.016300	2.5488E+05	.172606
32	+150	3	658.6	671.8	.014290	4.9719E+05	.085621

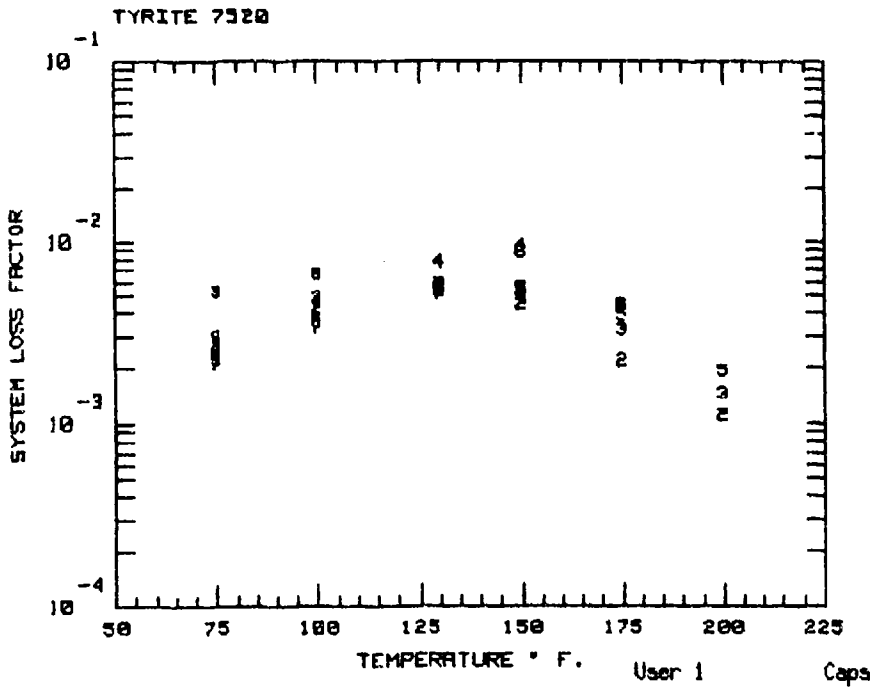
MATERIAL CODE: FUS306
MATERIAL: FUSOR306/350°CR
MANUFACTURER: LORD
REMARKS: NONE
DATE: 22 Dec 1986
ENTERED BY: HDW
BEAM MATERIAL: STAINLESS STEEL
BEAM NUMBER: 7-47
BEAM TYPE: FREE LAYER ONE SIDE
BEAM LENGTH: 7 in
BEAM THICKNESS: .0584 in
BEAM DENSITY: .283 lb/cu in
DAMPING MATERIAL THICKNESS: .0553 in
DAMPING MATERIAL DENSITY: .047 lb/cu in

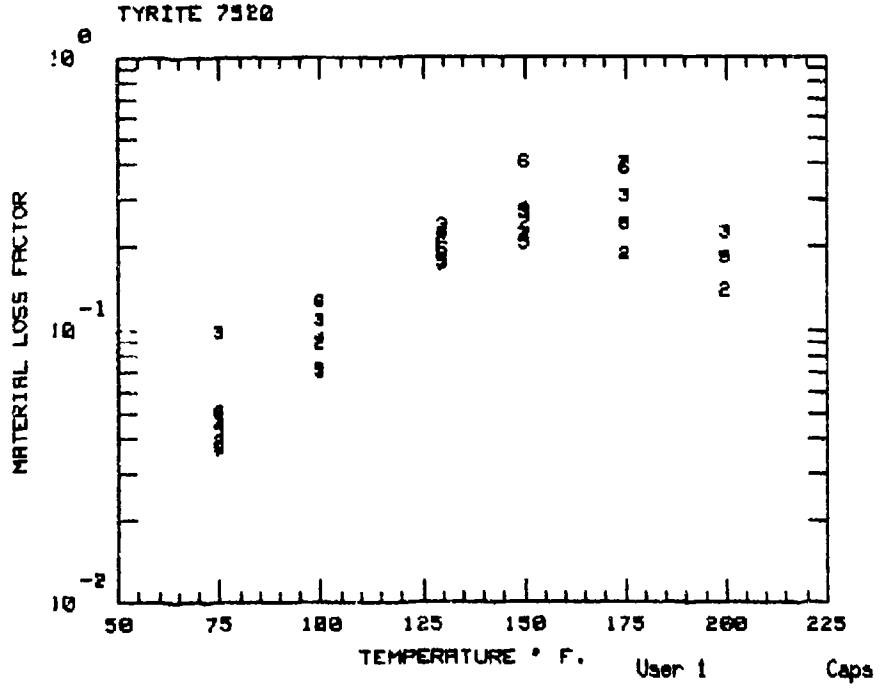
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	YOUNG'S MODULUS PSI	MATERIAL LOSS FACTOR
33	+150	4	1294.8	1268.2	.014270	2.6814E+05	.145036
34	+150	5	2138.5	2110.3	.012650	3.0875E+05	.113428
35	+150	6	3201.6	3147.9	.013220	2.9115E+05	.125660
36	+150	7	4480.9	4405.0	.012620	2.9030E+05	.120303
37	+175	2	234.8	222.6	.013160	9.5943E+04	.343054
38	+175	3	656.8	624.6	.015370	1.1138E+05	.346938
39	+175	4	1291.3	1234.0	.017180	1.3721E+05	.320481
40	+175	5	2132.6	2043.0	.017620	1.4949E+05	.302841
41	+175	6	3191.9	3075.2	.013040	1.8017E+05	.189858
42	+175	7	4468.8	4289.0	.017630	1.6038E+05	.286115
43	+200	2	234.2	220.0	.003050	5.0884E+04	.146006
44	+200	3	655.0	615.7	.005070	5.3417E+04	.231027
45	+200	4	1287.7	1215.0	.010450	7.2519E+04	.356115
46	+200	5	2126.6	2002.4	.008540	6.2159E+04	.337260
47	+200	6	3182.2	2999.0	.010240	6.7025E+04	.378498
48	+200	7	4456.7	4200.3	.011860	6.7346E+04	.437067

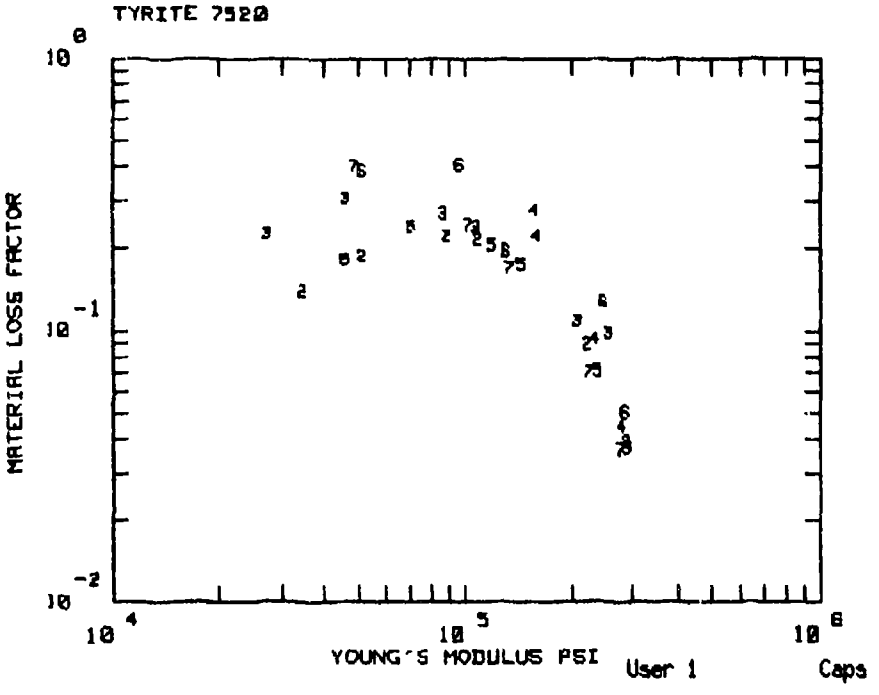

TYRITE 7520
TEMPERATURE DEG F (DELTA=25)
170
120
MODULUS
LOSS FACTOR
YOUNG'S MODULUS psi
FREQUENCY HERTZ
REDUCED FREQUENCY HERTZ


TYRITE 7520
FREQUENCY Hz
10^4
10^3
10^2
50
75
100
125
150
175
200
225
TEMPERATURE ° F.
User 1
Caps


TYRITE 7520
YOUNG'S MODULUS PSI
10^6
10^5
10^4
50
75
100
125
150
175
200
225
TEMPERATURE ° F.
User 1
Caps


TYRITE 7520
SYSTEM LOSS FACTOR
10^-1
10^-2
10^-3
10^-4
50
75
100
125
150
175
200
225
TEMPERATURE ° F.
User 1
Caps


TYRITE 7520
MATERIAL LOSS FACTOR
10^0
10^-1
10^-2
50
75
100
125
150
175
200
225
TEMPERATURE ° F.
User 1
Caps



MATERIAL CODE: ED0102
MATERIAL: TYRITE 7520

UNITS ARE ENGLISH
LOG(M)=LOG(ML)+(2LOG(MROM/ML))/(1+(FQROM/FR)^SLOPE)

TZERO	FQROM	MROM	SLOPE	ML
340.0	8.000E+08	6.600E+04	0.220	1.400E+04

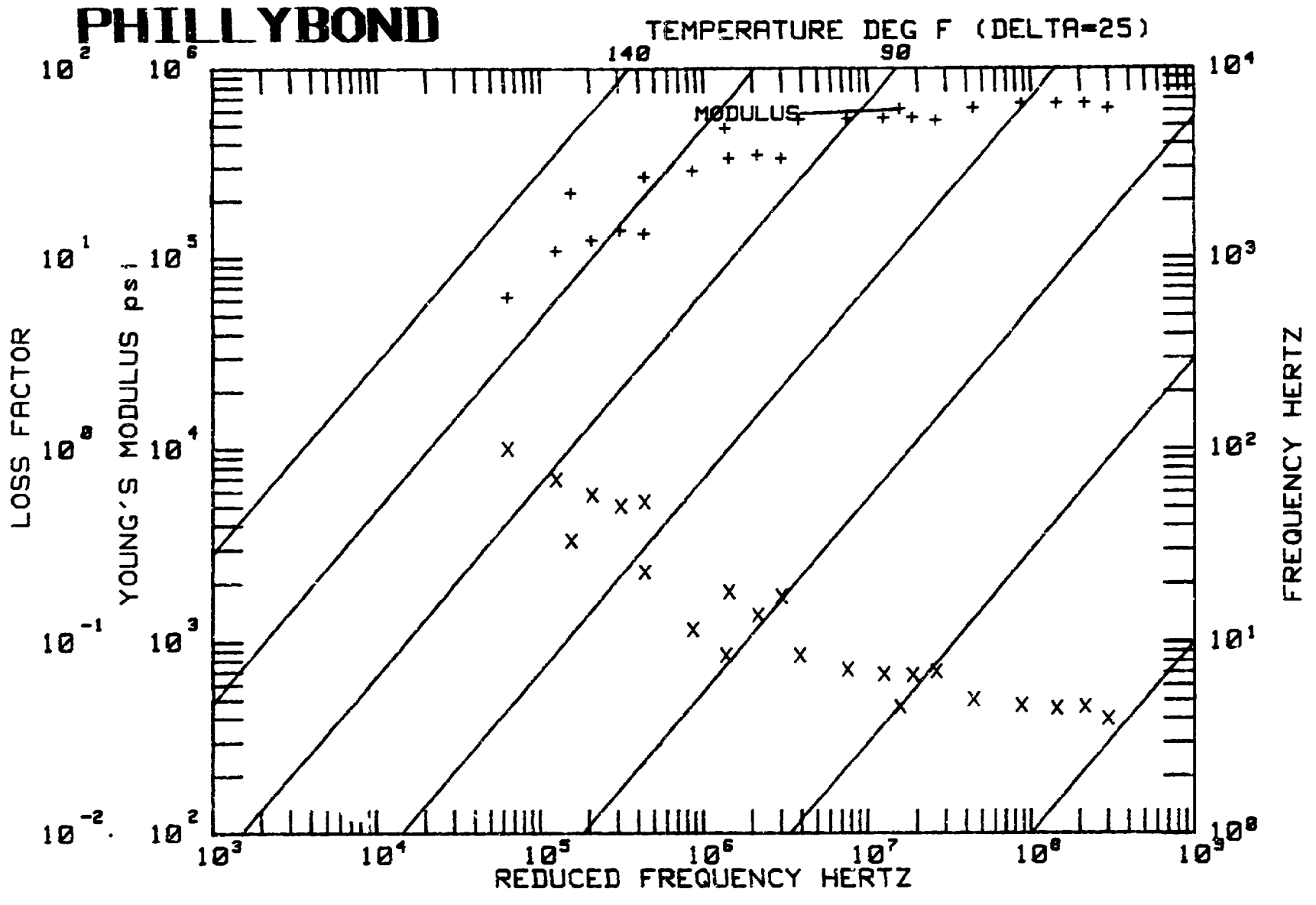
LOG(ETA)=LOG(ETFROL)+((SH+SL)A+(SL-SH)(1-SQR(1+A^2)))C/2

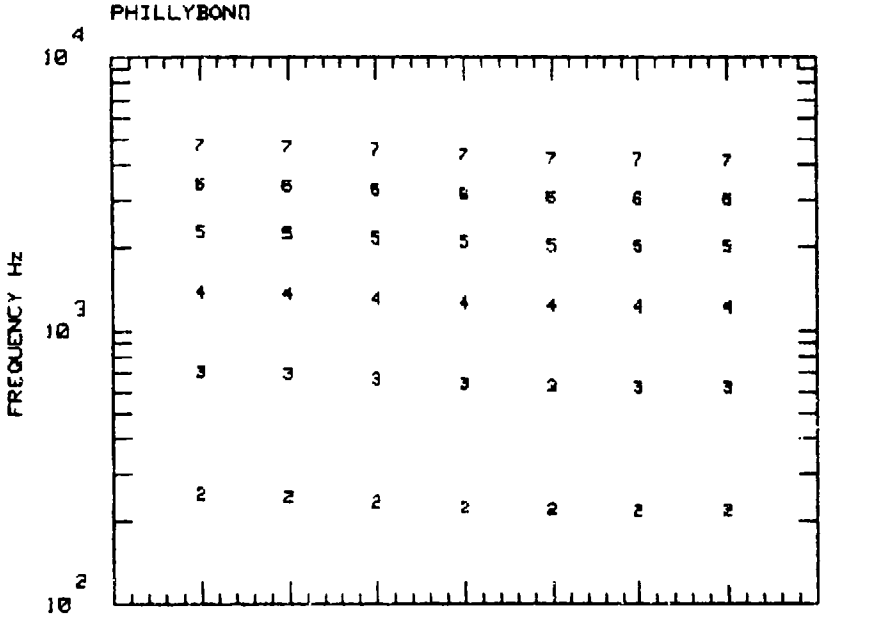
TZERO	ETFROL	SL	SH	FROL	C
340.0	.340	.150	-.130	4.000E+09	.700

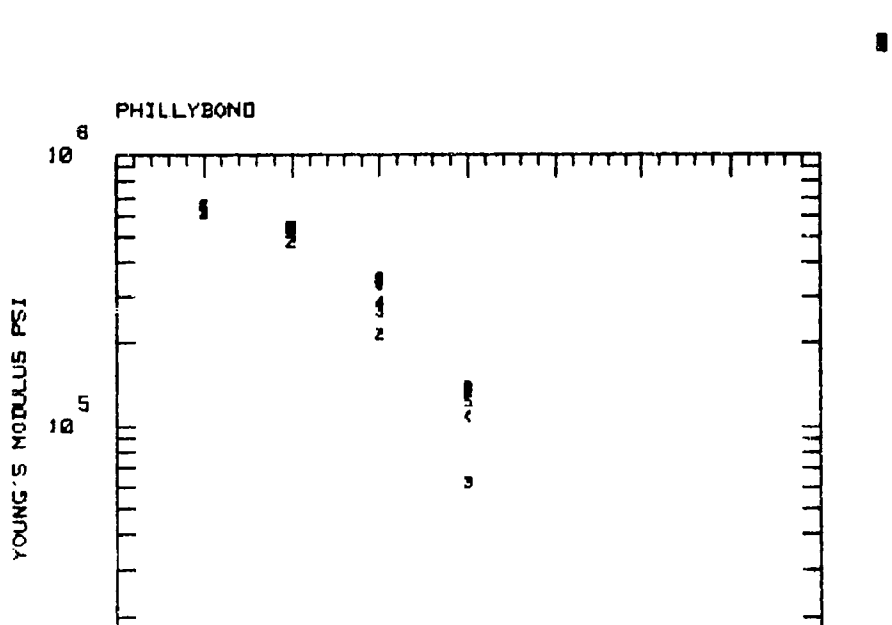
LOG(FR)=LOG(F)-12(T-T0)/(525+T-T0)
A=(LOG(FR)-LOG(FROL))/C

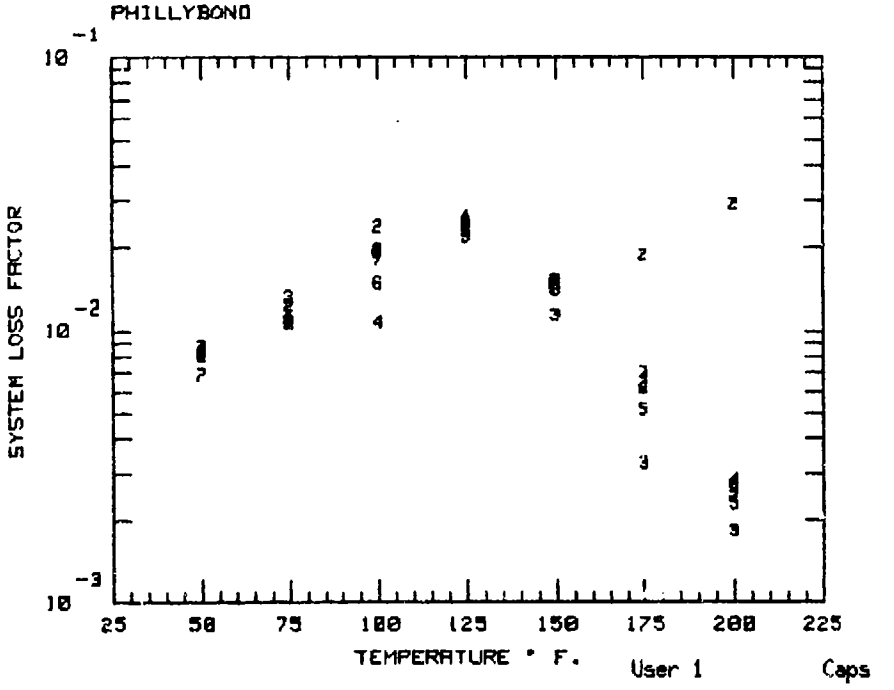
MATERIAL CODE: ED0102
MATERIAL: TYRITE 7520
MANUFACTURER: LORD
REMARKS: NONE
DATE: 9 Jun 1987
ENTERED BY: TCM
BEAM MATERIAL: STAINLESS STEEL
BEAM NUMBER: 7-50
BEAM TYPE: FREE LAYER ONE SIDE
BEAM LENGTH: 7 in
BEAM THICKNESS: .0588 in
BEAM DENSITY: .283 lb/cu in
DAMPING MATERIAL THICKNESS: .04127 in
DAMPING MATERIAL DENSITY: .039 lb/cu in

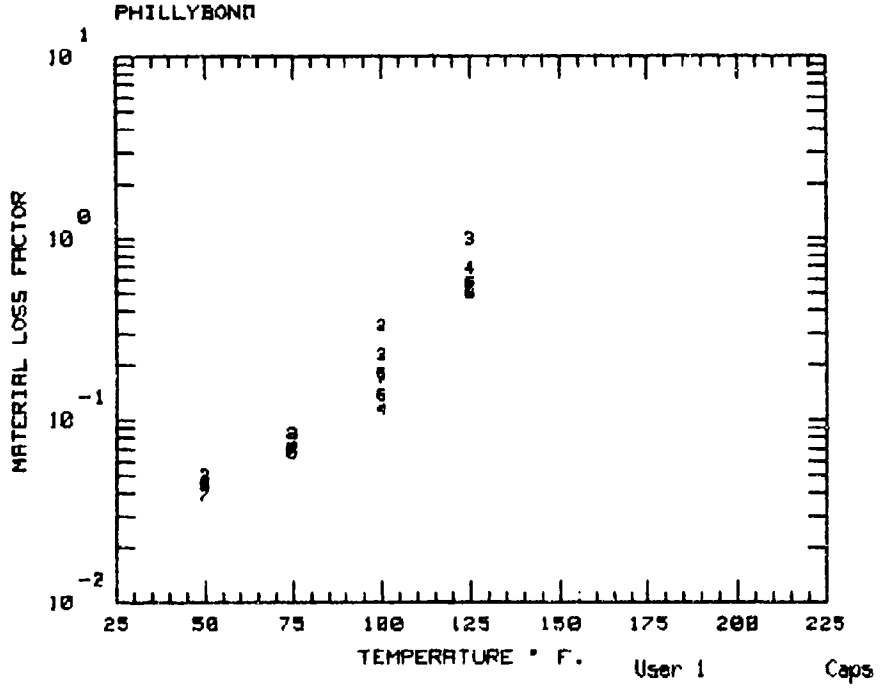
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	YOUNG'S MODULUS PSI	MATERIAL LOSS FACTOR
1	+75	2	239.5	236.0	.002390	2.8896E+05	.039477
2	+75	3	670.1	658.1	.005320	2.5617E+05	.098152
3	+75	4	1318.8	1298.0	.002600	2.7933E+05	.044606
4	+75	5	2176.7	2144.7	.002240	2.8944E+05	.037074
5	+75	6	3255.4	3205.9	.002980	2.8606E+05	.050145
6	+75	7	4556.4	4482.8	.002110	2.7693E+05	.036607
7	+100	2	238.9	233.8	.004250	2.2157E+05	.089529
8	+100	3	668.4	653.1	.004870	2.0847E+05	.108502
9	+100	4	1314.9	1288.1	.004640	2.3370E+05	.093518
10	+100	5	2170.5	2127.3	.003590	2.3743E+05	.071097
11	+100	6	3248.3	3185.9	.006600	2.4588E+05	.127371
12	+100	7	4544.9	4447.5	.003330	2.2444E+05	.070000
13	+130	2	238.1	230.2	.005270	1.0917E+05	.217390
14	+130	3	666.2	644.0	.005840	1.0858E+05	.241792
15	+130	4	1310.2	1273.5	.007750	1.5963E+05	.222775
16	+130	5	2163.1	2099.2	.005570	1.4448E+05	.175772
17	+130	6	3239.8	3139.0	.005650	1.3099E+05	.197645
18	+130	7	4531.1	4391.5	.005000	1.3380E+05	.171179
19	+150	2	237.6	229.2	.004460	8.9050E+04	.223401
20	+150	3	664.8	641.1	.005260	8.6987E+04	.269113
21	+150	4	1307.0	1270.3	.009530	1.5777E+05	.275756
22	+150	5	2158.2	2088.8	.005480	1.1945E+05	.206864
23	+150	6	3234.2	3122.0	.008750	9.7063E+04	.407992
24	+150	7	4521.9	4368.0	.005563	1.0297E+05	.244505
25	+200	2	236.4	226.6	.001120	3.4972E+04	.139287
26	+200	3	661.2	633.4	.001450	2.7571E+04	.227827
27	+200	5	2146.0	2060.0	.001930	4.5884E+04	.183834
28	+175	2	237.0	227.6	.002200	5.1262E+04	.188483
29	+175	3	663.0	636.5	.003220	4.6115E+04	.305677
30	+175	5	2152.1	2071.6	.003880	7.0483E+04	.243587
31	+175	6	3227.1	3099.4	.004450	5.1182E+04	.386992
32	+175	7	4510.4	4330.8	.004430	4.8741E+04	.403329

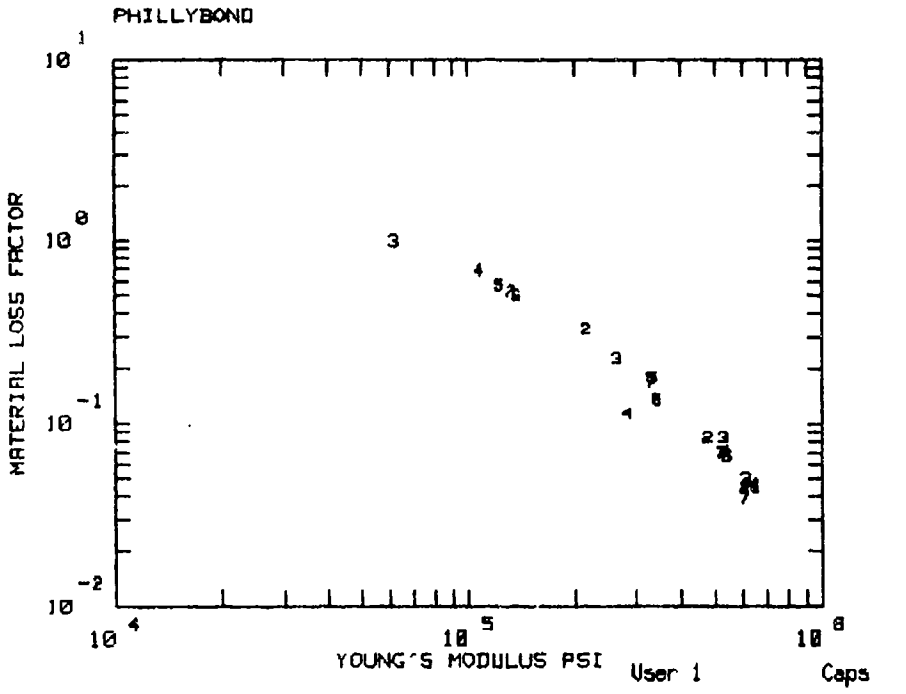

PHILLYBOND
TEMPERATURE DEG F (DELTA=25)
140
90
MODULUS
LOSS FACTOR
YOUNG'S MODULUS psi
FREQUENCY HERTZ
REDUCED FREQUENCY HERTZ
10^{2}
10^{6}
10^{1}
10^{5}
10^{0}
10^{4}
10^{-1}
10^{3}
10^{-2}
10^{2}
10^{4}
10^{3}
10^{2}
10^{1}
10^{0}
10^{3}
10^{4}
10^{5}
10^{6}
10^{7}
10^{8}
10^{9}


PHILLYBOND
FREQUENCY Hz
10^4
10^3
10^2
25 50 75 100 125 150 175 200 225
TEMPERATURE ° F.
User 1
Caps


PHILLYBOND
YOUNG'S MODULUS PSI
10^6
10^5
10^4
25 50 75 100 125 150 175 200 225
TEMPERATURE ° F.
User 1
Caps


PHILLYBOND
SYSTEM LOSS FACTOR
10^-1
10^-2
10^-3
25
50
75
100
125
150
175
200
225
TEMPERATURE ° F.
User 1
Caps


PHILLYBOND
MATERIAL LOSS FACTOR
10^1
10^0
10^-1
10^-2
25
50
75
100
125
150
175
200
225
TEMPERATURE ° F.
User 1
Caps



MATERIAL CODE: PHILLY
MATERIAL: PHILLYBOND/350°

UNITS ARE ENGLISH
LOG(M)=LOG(ML)+(2LOG(MROM/ML))/(1+(FQROM/FR)^SLOPE)

TZERO	FQROM	MROM	SLOPE	ML
200.0	0.000E+00	0.000E+00	0.000	0.000E+00

LOG(ETA)=LOG(ETFROL)+((SH+SL)A+(SL-SH)(1-SQR(1+A^2)))C/2

TZERO	ETFROL	SL	SH	FROL	C
200.0	0.000	0.000	0.000	0.000E+00	0.000

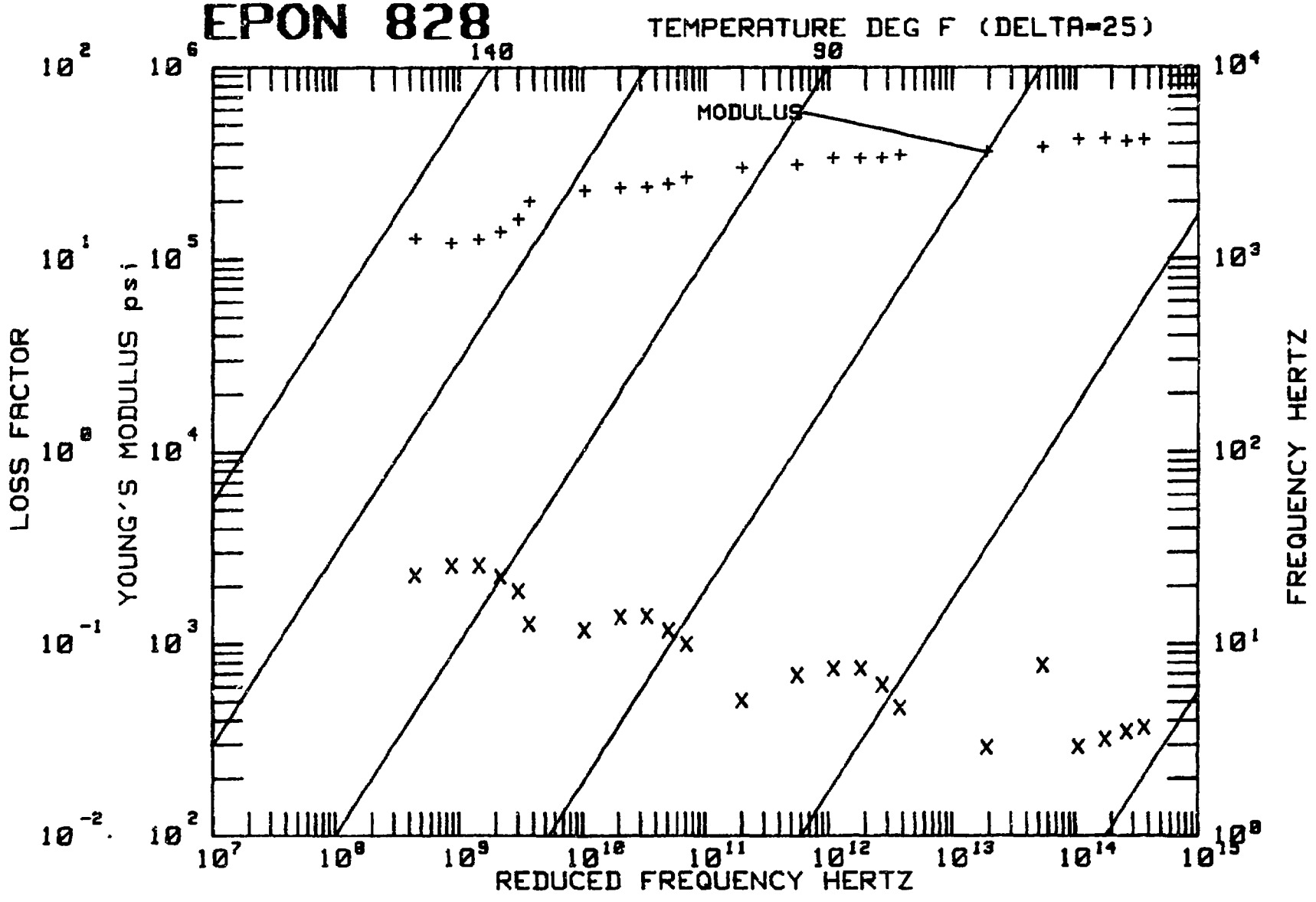
LOG(FR)=LOG(F)-12(T-T0)/(525+T-T0)
A=(LOG(FR)-LOG(FROL))/C

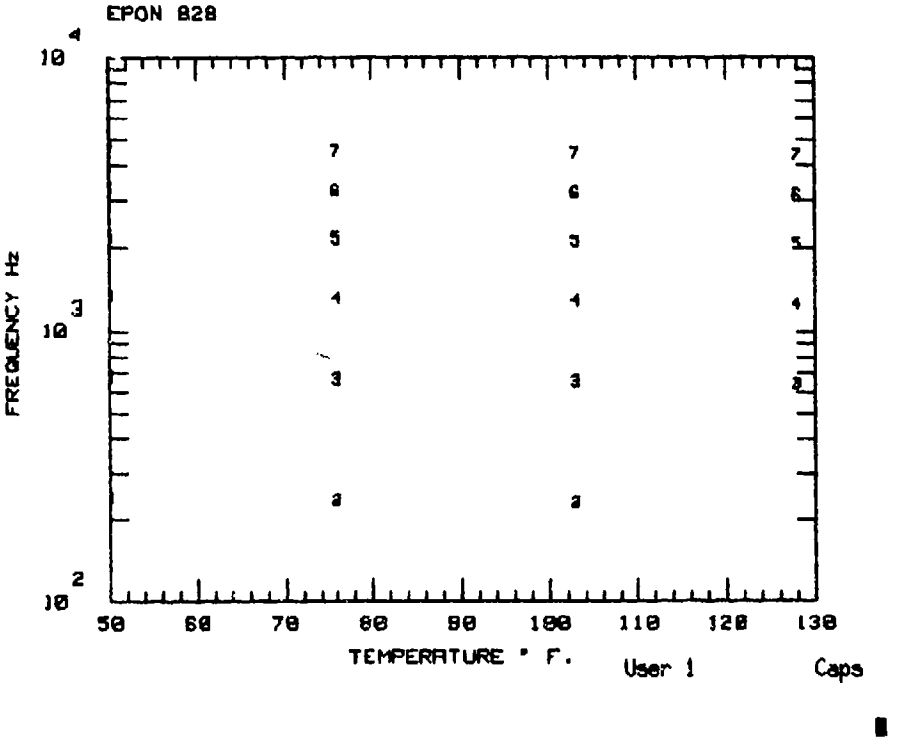
MATERIAL CODE: PHILLY
MATERIAL: PHILLYBOND/350*
MANUFACTURER: PHIL. RESIN CO.
REMARKS: NONE
DATE: 29 Dec 1986
ENTERED BY: HDW
BEAM MATERIAL: STAINLESS STEEL
BEAM NUMBER: 7-43
BEAM TYPE: FREE LAYER ONE SIDE
BEAM LENGTH: 7 in
BEAM THICKNESS: .0593 in
BEAM DENSITY: .283 lb/cu in
DAMPING MATERIAL THICKNESS: .05328 in
DAMPING MATERIAL DENSITY: .0395 lb/cu in

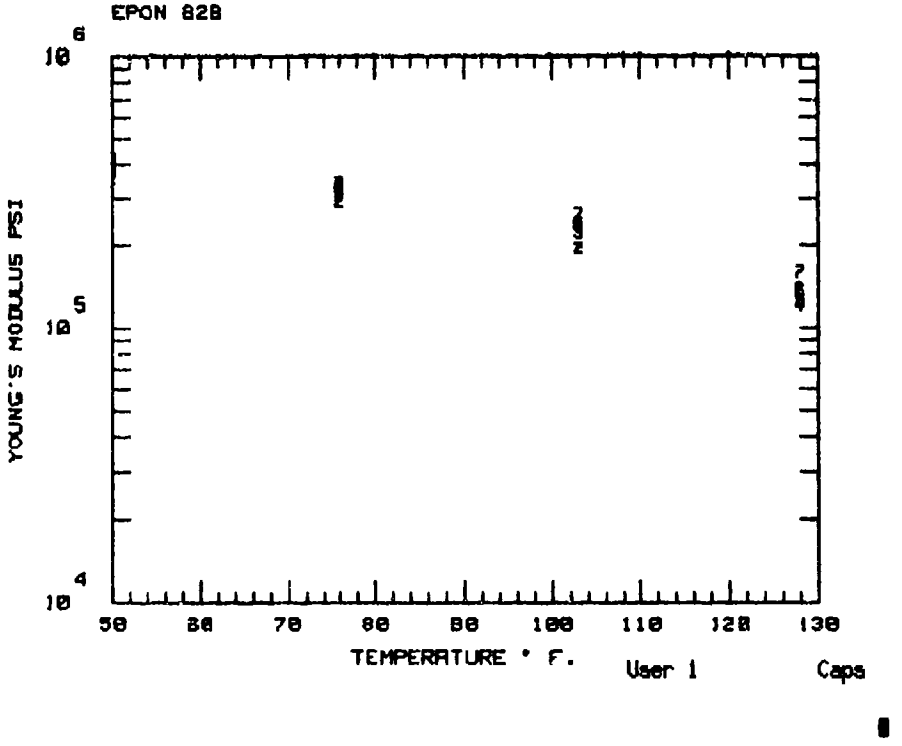
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	YOUNG'S MODULUS PSI	MATERIAL LOSS FACTOR
1	+50	2	241.6	251.5	.007990	6.0815E+05	.045307
2	+50	3	678.7	706.2	.008740	6.1154E+05	.049585
3	+50	4	1327.7	1389.1	.008500	6.4740E+05	.045996
4	+50	5	2199.5	2300.6	.008220	6.4824E+05	.044585
5	+50	6	3291.5	3440.9	.008340	6.4907E+05	.045448
6	+50	7	4597.3	4780.0	.006860	6.0858E+05	.039208
7	+75	2	241.0	246.1	.012310	4.7861E+05	.084345
8	+75	3	676.2	695.8	.013310	5.3095E+05	.084054
9	+75	4	1324.0	1363.5	.011290	5.3551E+05	.070718
10	+75	5	2193.3	2259.5	.010720	5.4023E+05	.066898
11	+75	6	3282.2	3380.9	.010590	5.4325E+05	.066180
12	+75	7	4585.6	4711.2	.010760	5.2395E+05	.069068
13	+100	2	240.3	235.4	.024090	2.1664E+05	.328608
14	+100	3	673.7	665.1	.019850	2.6457E+05	.226382
15	+100	4	1320.4	1308.0	.010700	2.8533E+05	.114101
16	+100	5	2187.0	2183.2	.019190	3.3361E+05	.178924
17	+100	6	3273.0	3272.1	.014880	3.4536E+05	.135481
18	+100	7	4573.9	4563.6	.017990	3.3201E+05	.169136
19	+125	2	239.7	225.5	.023020	0.0000E+00	0.000000
20	+125	3	671.2	639.9	.022190	6.1800E+04	.991009
21	+125	4	1316.7	1265.7	.026230	1.0788E+05	.685545
22	+125	5	2180.8	2101.7	.024550	1.2276E+05	.569457
23	+125	6	3263.8	3153.3	.023850	1.3816E+05	.498128
24	+125	7	4562.3	4404.0	.024230	1.3289E+05	.523952
25	+150	2	239.0	221.3	.015320	0.0000E+00	0.000000
26	+150	3	668.7	626.0	.011410	0.0000E+00	0.000000
27	+150	4	1313.0	1230.9	.015200	0.0000E+00	0.000000
28	+150	5	2174.6	2041.6	.014110	0.0000E+00	0.000000
29	+150	6	3254.6	3056.0	.014920	0.0000E+00	0.000000
30	+150	7	4550.6	4268.7	.014180	0.0000E+00	0.000000
31	+175	2	238.4	219.5	.018950	0.0000E+00	0.000000
32	+175	3	666.2	620.0	.003270	0.0000E+00	0.000000

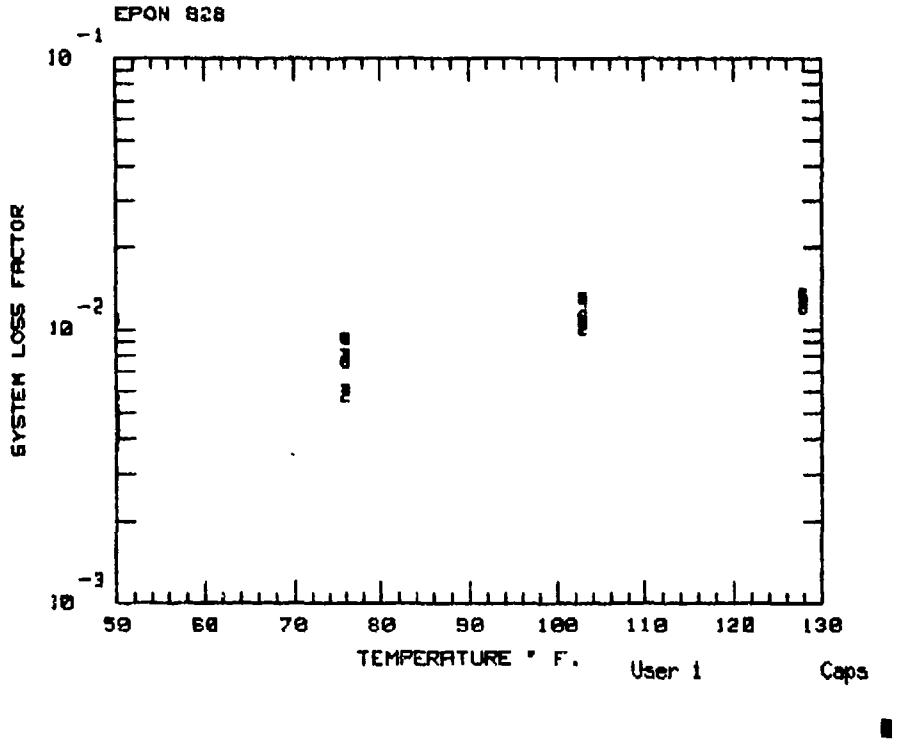
MATERIAL CODE: PHILLY
MATERIAL: PHILLYBOND/350°
MANUFACTURER: PHIL. RESIN CO.
REMARKS: NONE
DATE: 29 Dec 1986
ENTERED BY: HDW
BEAM MATERIAL: STAINLESS STEEL
BEAM NUMBER: 7-43
BEAM TYPE: FREE LAYER ONE SIDE
BEAM LENGTH: 7 in
BEAM THICKNESS: .0593 in
BEAM DENSITY: .283 lb/cu in
DAMPING MATERIAL THICKNESS: .05328 in
DAMPING MATERIAL DENSITY: .0[illegible]5 lb/cu in

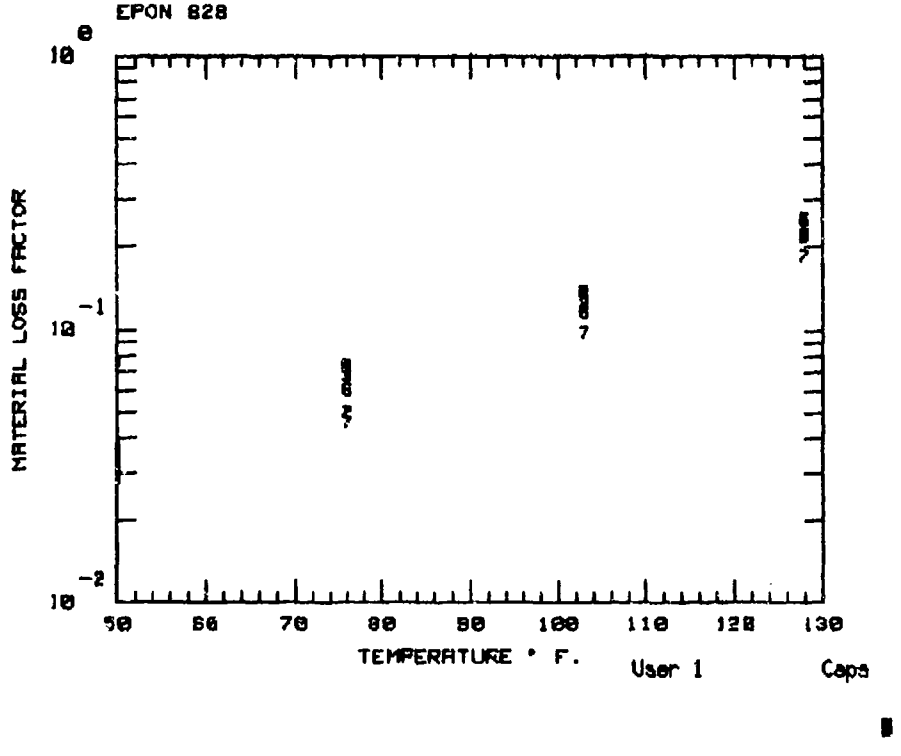
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	YOUNG'S MODULUS PSI	MATERIAL LOSS FACTOR
33	+175	4	1309.4	1219.8	.006800	0.0000E+00	0.000000
34	+175	5	2168.4	2021.7	.005140	0.0000E+00	0.000000
35	+175	6	3245.3	3021.1	.006160	0.0000E+00	0.000000
36	+175	7	4538.9	4218.1	.006990	0.0000E+00	0.000000
37	+200	2	237.7	218.4	.029120	0.0000E+00	0.000000
38	+200	3	663.7	617.6	.001830	0.0000E+00	0.000000
39	+200	4	1305.7	1214.2	.002820	0.0000E+00	0.000000
40	+200	5	2162.2	2012.7	.002310	0.0000E+00	0.000000
41	+200	6	3236.1	3006.1	.002710	0.0000E+00	0.000000
42	+200	7	4527.2	4196.3	.002450	0.0000E+00	0.000000

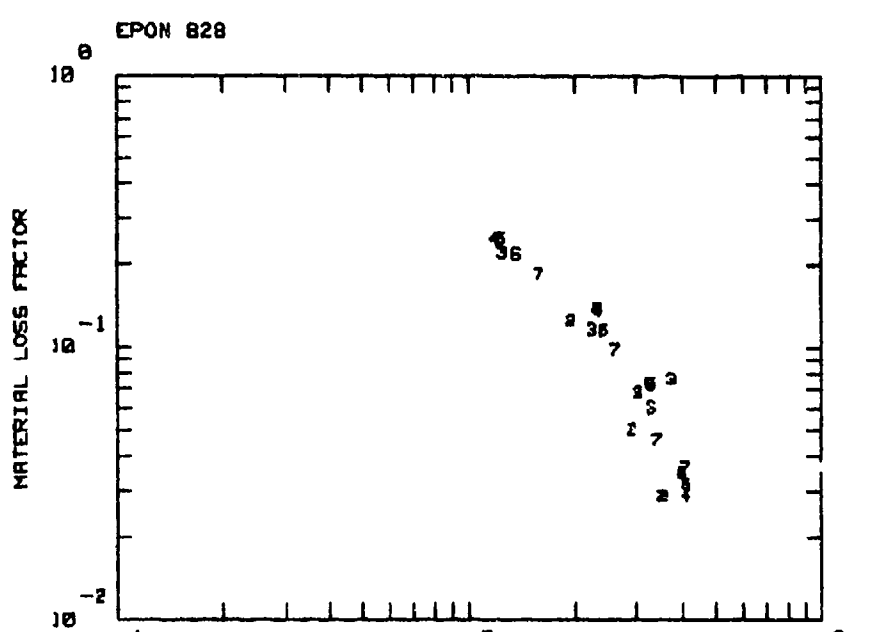

EPON 828
TEMPERATURE DEG F (DELTA=25)
140
90
MODULUS
LOSS FACTOR
YOUNG'S MODULUS psi
FREQUENCY HERTZ
REDUCED FREQUENCY HERTZ
10^{2}
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{6}
10^{5}
10^{4}
10^{3}
10^{2}
10^{4}
10^{3}
10^{2}
10^{1}
10^{0}
10^{7}
10^{8}
10^{9}
10^{10}
10^{11}
10^{12}
10^{13}
10^{14}
10^{15}


EPON 828
FREQUENCY Hz
10^4
10^3
10^2
50 60 70 80 90 100 110 120 130
TEMPERATURE ° F.
User 1
Caps


EPON 828
YOUNG'S MODULUS PSI
10^6
10^5
10^4
50 60 70 80 90 100 110 120 130
TEMPERATURE ° F.
User 1
Caps


EPON 828
SYSTEM LOSS FACTOR
10^-1
10^-2
10^-3
50
60
70
80
90
100
110
120
130
TEMPERATURE ° F.
User 1
Caps


EPON 828
MATERIAL LOSS FACTOR
10^0
10^-1
10^-2
50
60
70
80
90
100
110
120
130
TEMPERATURE ° F.
User 1
Caps



MATERIAL CODE: ED0407
MATERIAL: EPON 828

UNITS ARE ENGLISH
LOG(M)=LOG(ML)+(2LOG(MROM/ML))/(1+(FQROM/FR)^SLOPE)

TZERO	FQROM	MROM	SLOPE	ML
300.0	0.000E+00	0.000E+00	0.000	0.000E+00

LOG(ETA)=LOG(ETFROL)+((SH+SL)A+(SL-SH)(1-SQR(1+A^2)))C/2

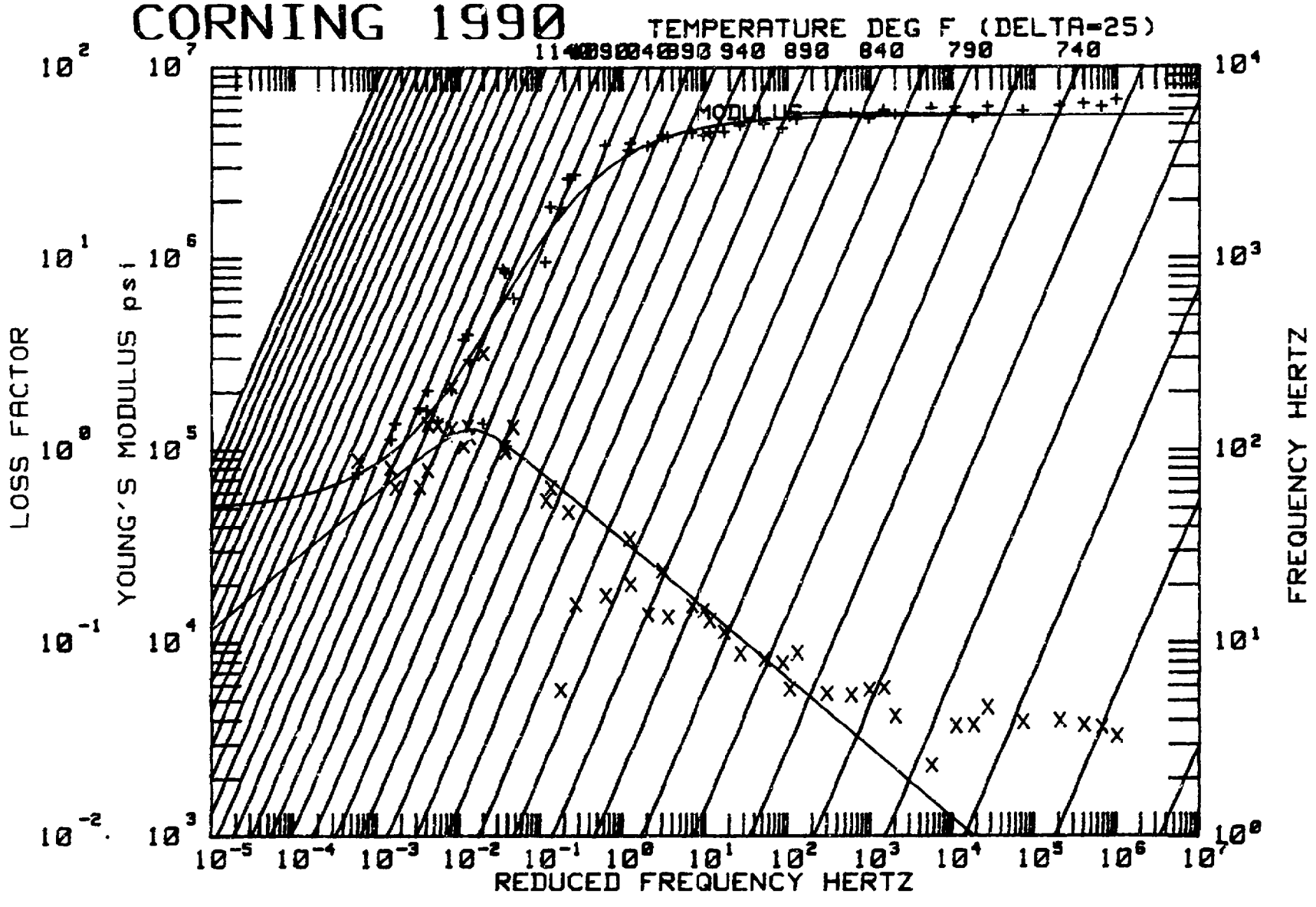
TZERO	ETFROL	SL	SH	FROL	C
300.0	0.000	0.000	0.000	0.000E+00	0.000

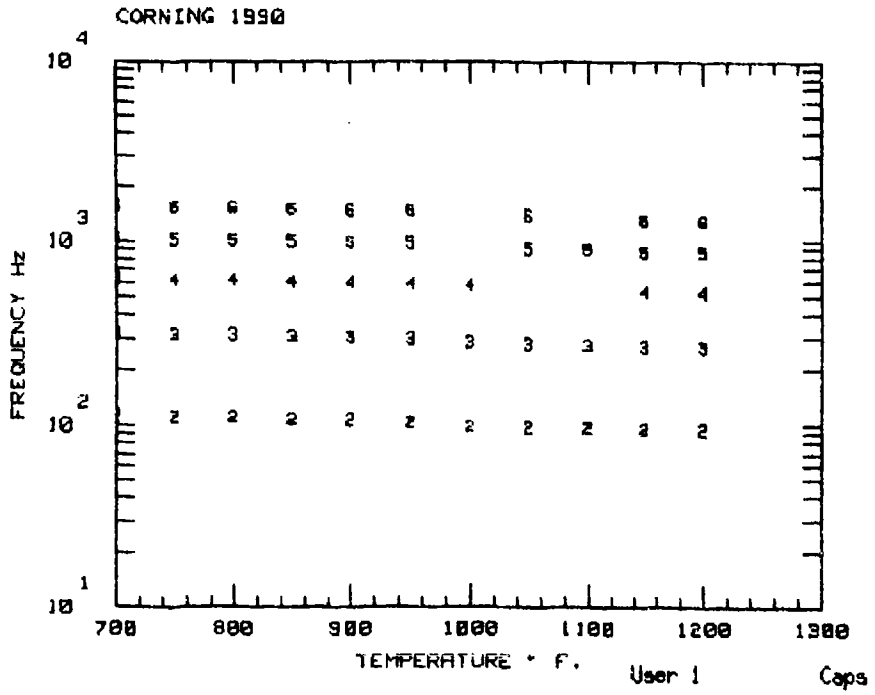
LOG(FR)=LOG(F)-12(T-T0)/(525+T-T0)
A=(LOG(FR)-LOG(FROL))/C

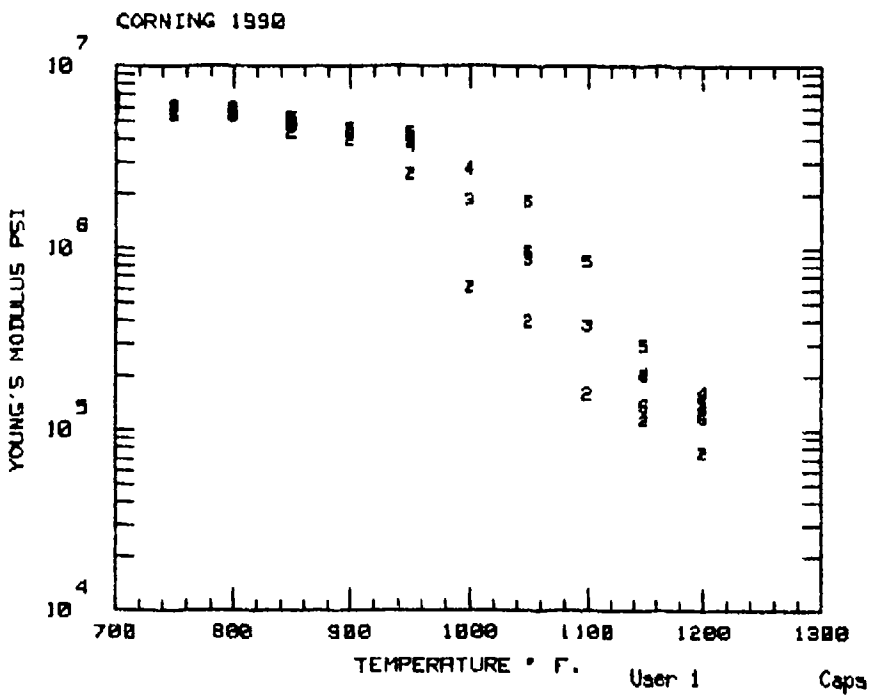
MATERIAL CODE: ED0407
MATERIAL: EPON 828
MANUFACTURER: SHELL CHEMICAL
REMARKS:
DATE: 18 Feb 1988
ENTERED BY: TVG
BEAM MATERIAL: STAINLESS STEEL
BEAM NUMBER: SS-7-44
BEAM TYPE: FREE LAYER ONE SIDE
BEAM LENGTH: 7 in
BEAM THICKNESS: .0594 in
BEAM DENSITY: .283 lb/cu in
DAMPING MATERIAL THICKNESS: .0583 in
DAMPING MATERIAL DENSITY: .0419 lb/cu in

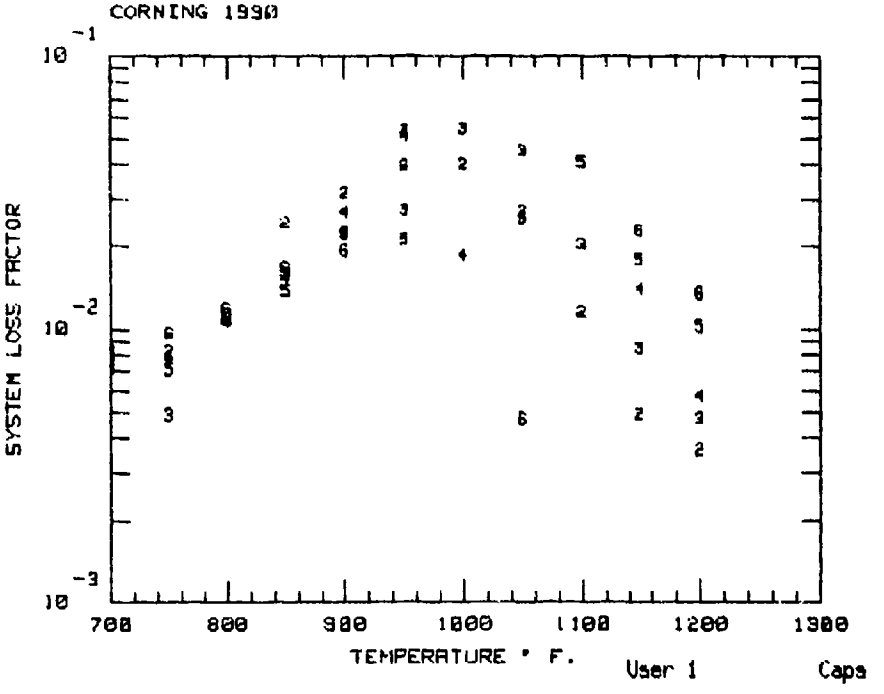
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	YOUNG'S MODULUS PSI	MATERIAL LOSS FACTOR
1	+50	2	238.6	240.0	.003850	3.5528E+05	.028479
2	+50	3	668.0	674.3	.010750	3.7443E+05	.076058
3	+50	4	1316.1	1336.6	.004350	4.1139E+05	.028722
4	+50	5	2181.2	2215.3	.004760	4.1383E+05	.031409
5	+50	6	3260.9	3303.6	.005080	4.0224E+05	.034466
6	+50	7	4534.4	4604.5	.005490	4.0981E+05	.036300
7	+76	2	238.4	236.9	.005720	2.9179E+05	.049971
8	+76	3	667.3	664.7	.008050	3.0406E+05	.067836
9	+76	4	1314.4	1314.6	.009180	3.2886E+05	.072968
10	+76	5	2178.5	2178.5	.009210	3.2969E+05	.073376
11	+76	6	3256.7	3256.0	.007520	3.3037E+05	.060073
12	+76	7	4532.4	4545.2	.005980	3.4271E+05	.045875
13	+103	2	238.1	232.1	.010040	1.9595E+05	.124655
14	+103	3	666.6	653.6	.010600	2.2469E+05	.116297
15	+103	4	1312.6	1288.3	.012650	2.3173E+05	.136193
16	+103	5	2175.7	2136.3	.012920	2.3513E+05	.137966
17	+103	6	3252.3	3197.7	.011130	2.4318E+05	.115863
18	+103	7	4530.2	4472.6	.010150	2.6178E+05	.098197
19	+128	3	665.9	639.7	.012010	1.2564E+05	.224261
20	+128	4	1311.0	1257.3	.012780	1.1913E+05	.253067
21	+128	5	2173.1	2086.2	.013260	1.2452E+05	.253180
22	+128	6	3248.2	3126.0	.012640	1.3702E+05	.221668
23	+128	7	4528.2	4379.1	.012240	1.5933E+05	.185276

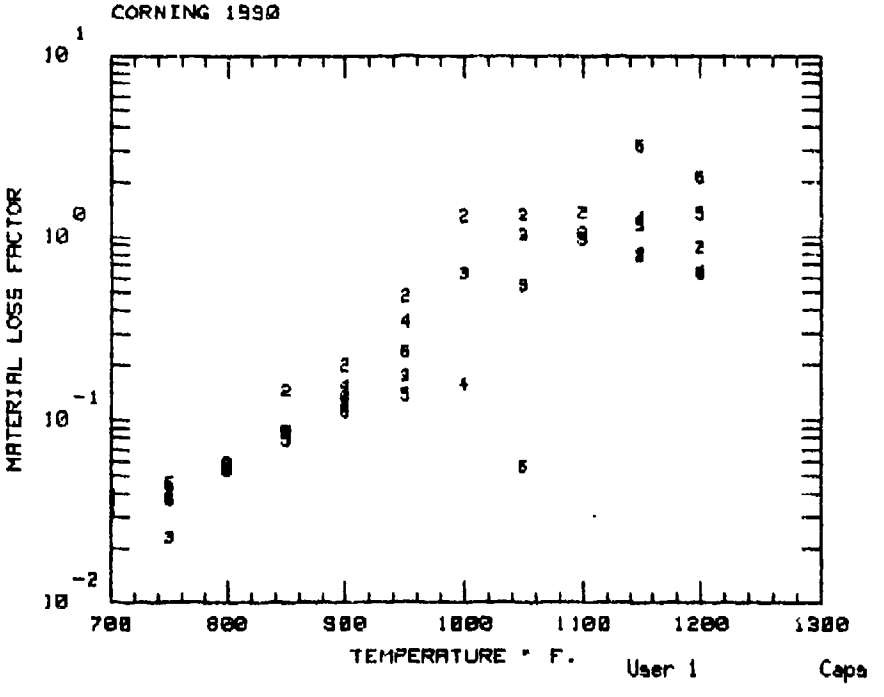
APPENDIX D
ENAMELS

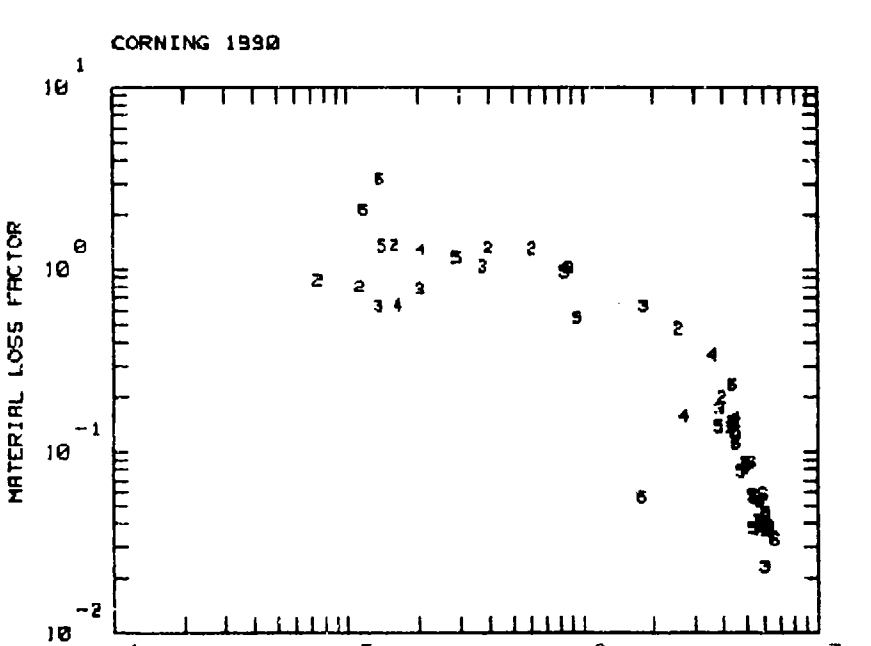

CORNING 1990
TEMPERATURE DEG F (DELTA=25)
1140 990 940 890 840 790 740
MODULUS
LOSS FACTOR
YOUNG'S MODULUS psi
FREQUENCY HERTZ
REDUCED FREQUENCY HERTZ
10^{2} 10^{1} 10^{0} 10^{-1} 10^{-2}
10^{7} 10^{6} 10^{5} 10^{4} 10^{3}
10^{4} 10^{3} 10^{2} 10^{1} 10^{0}
10^{-5} 10^{-4} 10^{-3} 10^{-2} 10^{-1} 10^{0} 10^{1} 10^{2} 10^{3} 10^{4} 10^{5} 10^{6} 10^{7}


CORNING 1990
FREQUENCY Hz
10^4
10^3
10^2
10^1
700
800
900
1000
1100
1200
1300
TEMPERATURE ° F.
User 1
Caps


CORNING 1990
YOUNG'S MODULUS PSI
10^7
10^6
10^5
10^4
700
800
900
1000
1100
1200
1300
TEMPERATURE ° F.
User 1
Caps


CORNING 1990
SYSTEM LOSS FACTOR
10^-1
10^-2
10^-3
700
800
900
1000
1100
1200
1300
TEMPERATURE ° F.
User 1
Capa


CORNING 1990
MATERIAL LOSS FACTOR
10^1
10^0
10^-1
10^-2
700
800
900
1000
1100
1200
1300
TEMPERATURE ° F.
User 1
Capa



MATERIAL CODE: C_1990
MATERIAL: CORNING # 1990

UNITS ARE ENGLISH
LOG(M)=LOG(ML)+(2LOG(MROM/ML))/(1+(FQROM/FR)^SLOPE)

TZERO	FQROM	MROM	SLOPE	ML
800.0	3.000E-02	5.300E+05	0.600	5.000E+04

LOG(ETA)=LOG(ETFROL)+((SH+SL)A+(SL-SH)(1-SQR(1+A^2)))C/2

TZERO	ETFROL	SL	SH	FROL	C
800.0	1.300	.360	-.360	1.400E-02	.250

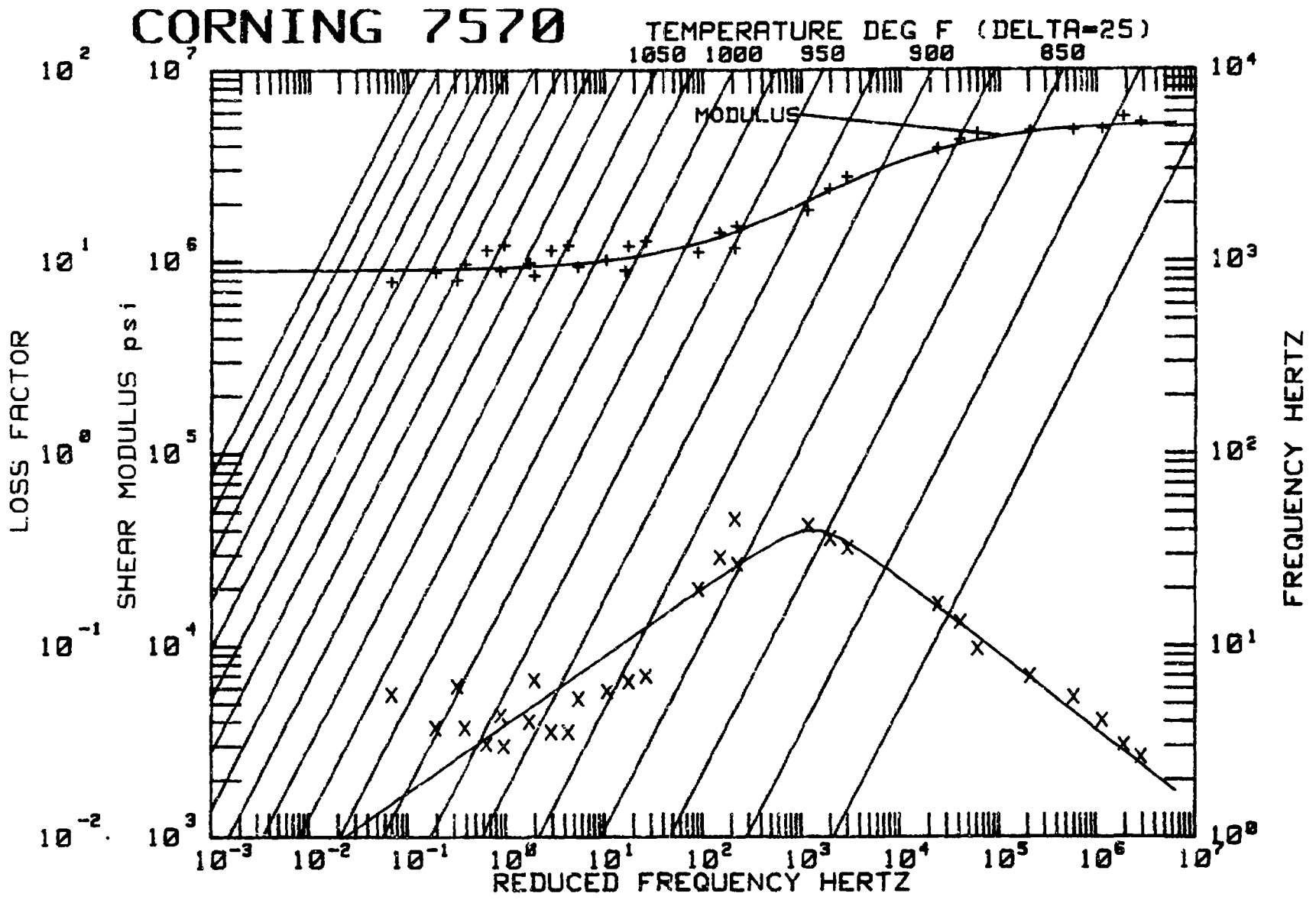
LOG(FR)=LOG(F)-12(T-T0)/(525+T-T0)
A=(LOG(FR)-LOG(FROL))/C

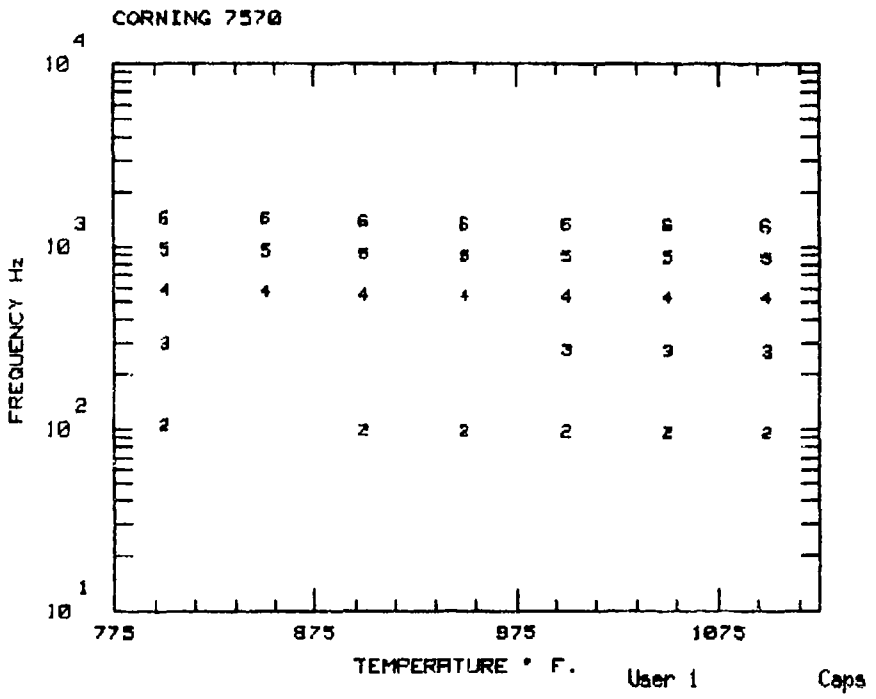
MATERIAL CODE: C_1990
MATERIAL: CORNING # 1990
MANUFACTURER: CORNING GLASS
REMARKS: RETEST 1000 HRS/1000°F
DATE: 9 Jan 1987
ENTERED BY: HDW
BEAM MATERIAL: HAYNES #188
BEAM NUMBER: 01-56-2
BEAM TYPE: FREE LAYER ONE SIDE
BEAM LENGTH: 8.25 in
BEAM THICKNESS: .0377 in
BEAM DENSITY: .33 lb/cu in
DAMPING MATERIAL THICKNESS: .011 in
DAMPING MATERIAL DENSITY: .1253711 lb/cu in

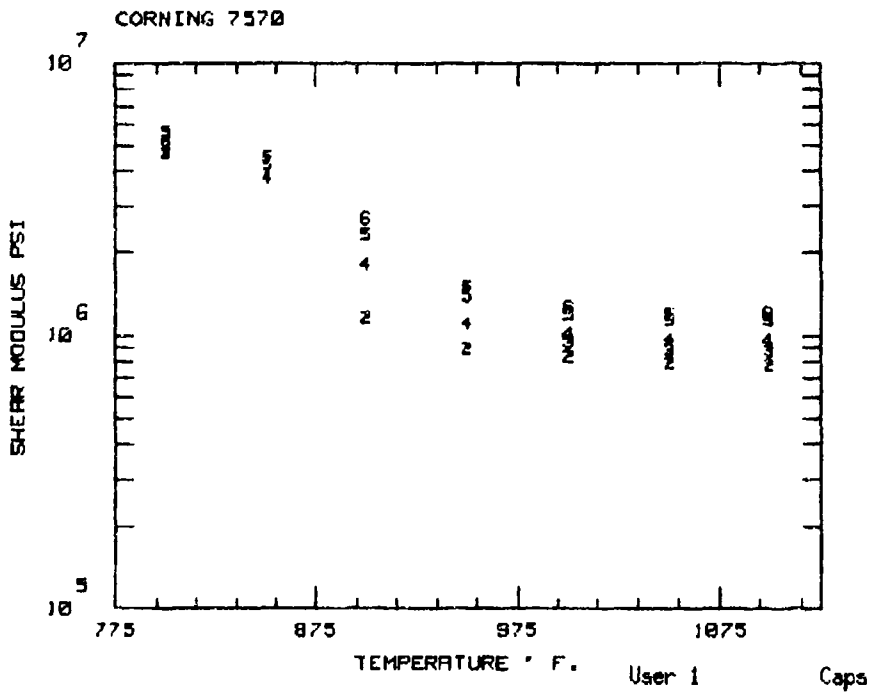
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	YOUNG'S MODULUS PSI	MATERIAL LOSS FACTOR
1	+700	2	104.8	114.3	.007840	5.8244E+06	.038445
2	+700	3	293.3	316.1	.008320	6.1752E+06	.039175
3	+700	4	575.7	622.0	.008020	6.3368E+06	.037194
4	+700	5	957.3	1029.0	.007590	6.1149E+06	.036345
5	+700	6	1428.1	1549.0	.007200	6.6567E+06	.032592
6	+750	2	104.4	111.5	.008250	5.6024E+06	.041342
7	+750	3	291.0	313.4	.004850	6.0384E+06	.022939
8	+750	4	572.4	616.4	.007790	6.0784E+06	.036868
9	+750	5	956.3	1014.8	.007100	5.3647E+06	.037196
10	+750	6	1420.9	1529.0	.009610	6.1225E+06	.045698
11	+800	2	103.3	110.3	.011330	5.4857E+06	.056755
12	+800	3	289.3	310.2	.011030	5.7211E+06	.053697
13	+800	4	569.4	609.5	.010710	5.6763E+06	.052740
14	+800	5	947.6	1006.5	.010800	5.3188E+06	.056191
15	+800	6	1413.8	1517.0	.011870	5.8967E+06	.057516
16	+850	2	103.4	108.1	.024520	4.3566E+06	.145375
17	+850	3	288.1	304.6	.016120	4.9133E+06	.086853
18	+850	4	566.3	599.5	.015210	5.0119E+06	.081144
19	+850	5	943.1	992.1	.013810	4.7469E+06	.077467
20	+850	6	1406.7	1494.9	.016860	5.3001E+06	.087391
21	+900	2	102.8	106.7	.031490	3.9713E+06	.198354
22	+900	3	287.5	300.4	.022640	4.2874E+06	.134400
23	+900	4	564.2	592.1	.026850	4.5179E+06	.153664
24	+900	5	935.2	980.7	.022330	4.5038E+06	.128605
25	+900	6	1399.9	1468.0	.019410	4.5389E+06	.111794
26	+950	2	102.2	103.2	.053490	2.5876E+06	.471292
27	+950	3	285.2	295.9	.027240	3.8633E+06	.172915
28	+950	4	559.9	578.0	.051210	3.6324E+06	.341903
29	+950	5	932.8	965.8	.021230	3.8355E+06	.137539
30	+950	6	1392.1	1456.0	.039700	4.3535E+06	.233911
31	+1000	2	101.7	98.0	.040410	6.1461E+05	1.299769
32	+1000	3	283.5	281.7	.054450	1.8522E+06	.628311

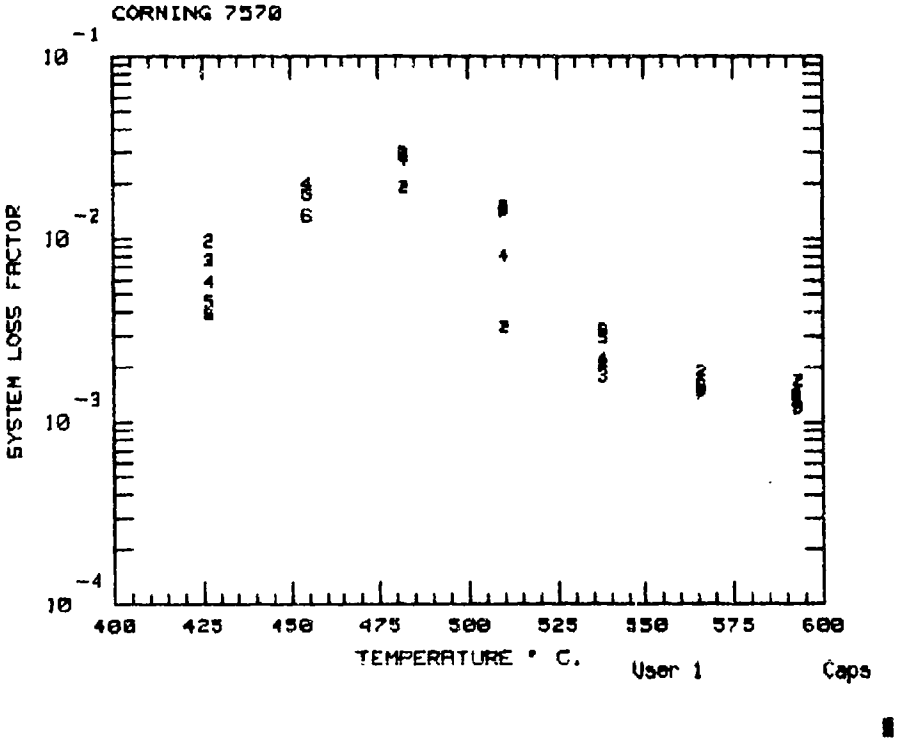
MATERIAL CODE: C_1990
MATERIAL: CORNING # 1990
MANUFACTURER: CORNING GLASS
REMARKS: RETEST 1000 HRS/1000'F
DATE: 9 Jan 1987
ENTERED BY: HDW
BEAM MATERIAL: HAYNES #188
BEAM NUMBER: 01-56-2
BEAM TYPE: FREE LAYER ONE SIDE
BEAM LENGTH: 8.25 in
BEAM THICKNESS: .0377 in
BEAM DENSITY: .33 lb/cu in
DAMPING MATERIAL THICKNESS: .011 in
DAMPING MATERIAL DENSITY: .1253711 lb/cu in

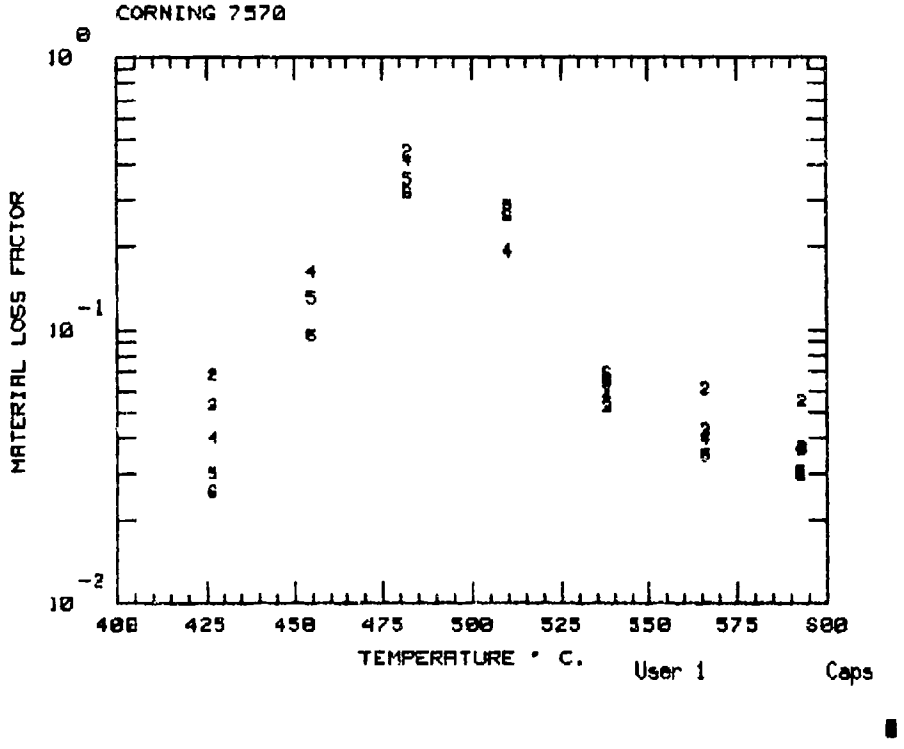
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	YOUNG'S MODULUS PSI	MATERIAL LOSS FACTOR
33	+1000	4	556.7	564.1	.018680	2.7233E+06	.155747
34	+1050	2	101.2	97.0	.027020	3.9762E+05	1.310142
35	+1050	3	283.0	274.7	.045110	8.7550E+05	1.026236
36	+1050	5	920.8	895.1	.025470	9.4850E+05	.542126
37	+1050	6	1378.2	1367.7	.004710	1.8185E+06	.055861
38	+1100	2	100.5	95.8	.011480	1.5893E+05	1.352354
39	+1100	3	281.3	269.6	.020510	3.7487E+05	1.039218
40	+1100	5	915.0	887.3	.040970	8.3946E+05	.966261
41	+1150	2	99.9	95.0	.004910	1.1312E+05	.798885
42	+1150	3	279.5	266.7	.008480	2.0205E+05	.777196
43	+1150	4	548.6	523.4	.014040	2.0426E+05	1.277144
44	+1150	5	903.5	869.7	.017930	2.9082E+05	1.159527
45	+1150	6	1358.8	1294.0	.023110	1.3738E+05	3.139988
46	+1200	2	99.1	94.3	.003610	7.5291E+04	.867562
47	+1200	3	277.6	264.4	.004730	1.3632E+05	.630797
48	+1200	4	544.9	519.3	.005700	1.6347E+05	.637318
49	+1200	5	903.5	860.5	.010180	1.4004E+05	1.334325
50	+1200	6	1349.6	1284.6	.013520	1.1752E+05	2.115504

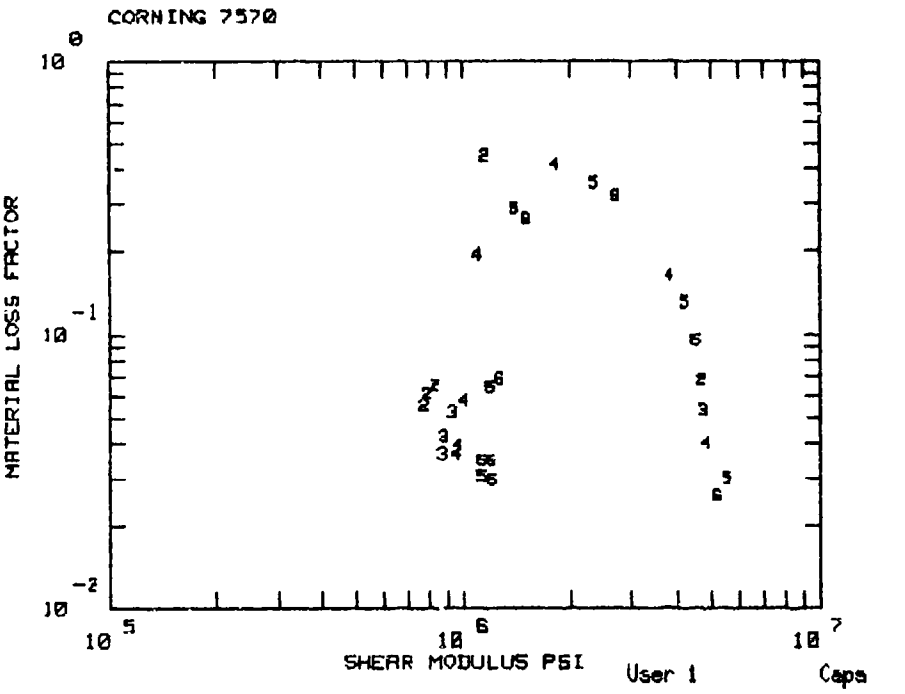

CORNING 7570
TEMPERATURE DEG F (DELTA=25)
1050 1000 950 900 850
MODULUS
LOSS FACTOR
SHEAR MODULUS psi
FREQUENCY HERTZ
REDUCED FREQUENCY HERTZ


CORNING 7570
FREQUENCY Hz
TEMPERATURE ° F.
775
875
975
1075
User 1
Caps


CORNING 7570
SHEAR MODULUS PSI
TEMPERATURE ° F.
775
875
975
1075
User 1
Caps


CORNING 7570
SYSTEM LOSS FACTOR
10^-1
10^-2
10^-3
10^-4
400
425
450
475
500
525
550
575
600
TEMPERATURE ° C.
User 1
Caps


CORNING 7570
MATERIAL LOSS FACTOR
10^0
10^-1
10^-2
400
425
450
475
500
525
550
575
600
TEMPERATURE ° C.
User 1
Caps



MATERIAL CODE: C_7570
MATERIAL: CORNING 7570

UNITS ARE ENGLISH
LOG(M)=LOG(ML)+(2LOG(MROM/ML))/(1+(FQROM/FR)^SLOPE)

TZERO	FQROM	MROM	SLOPE	ML
914.0	1.509E+03	2.183E+06	0.530	9.009E+05

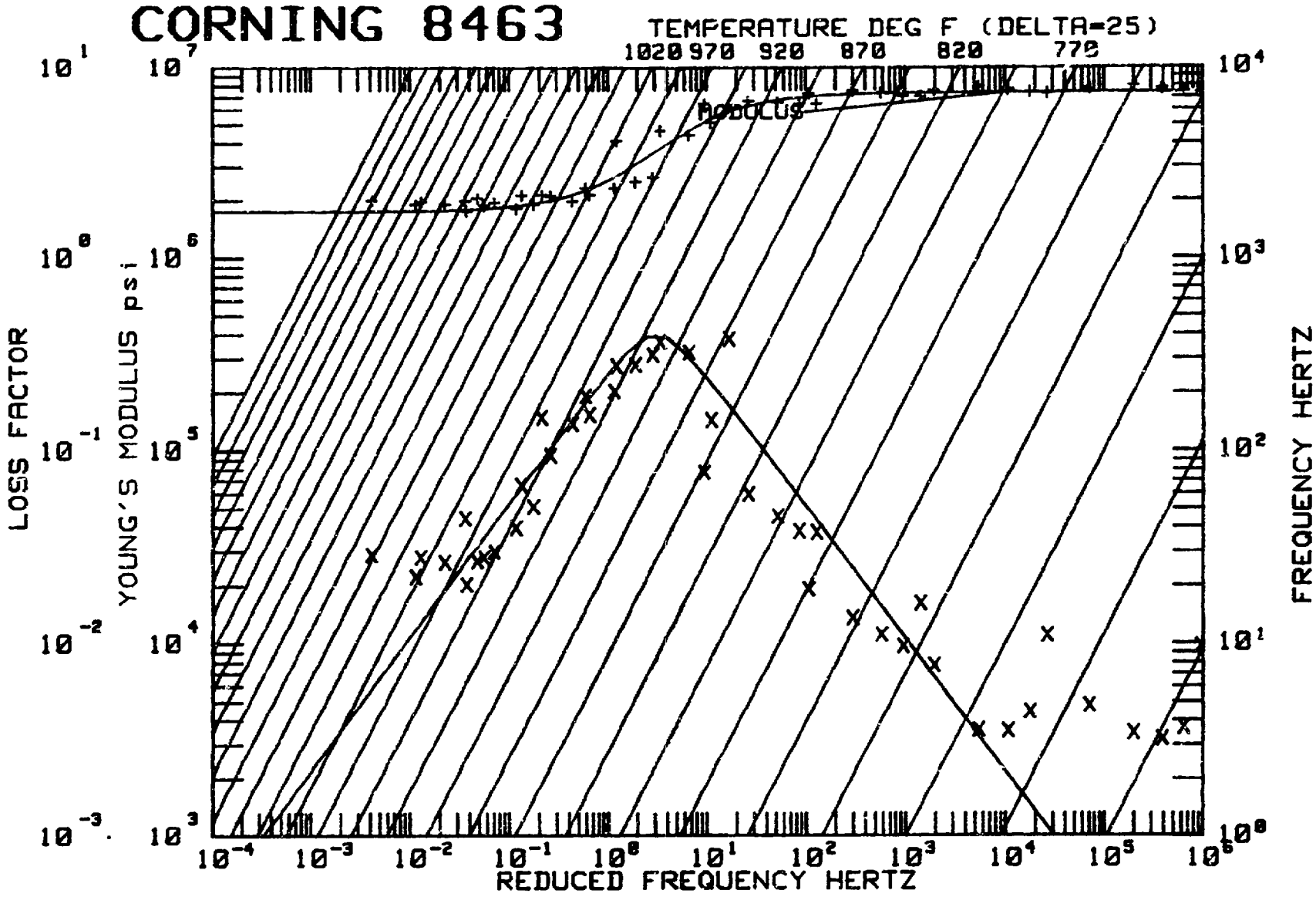
LOG(ETA)=LOG(ETFROL)+((SH+SL)A+(SL-SH)(1-SQR(1+A^2)))C/2

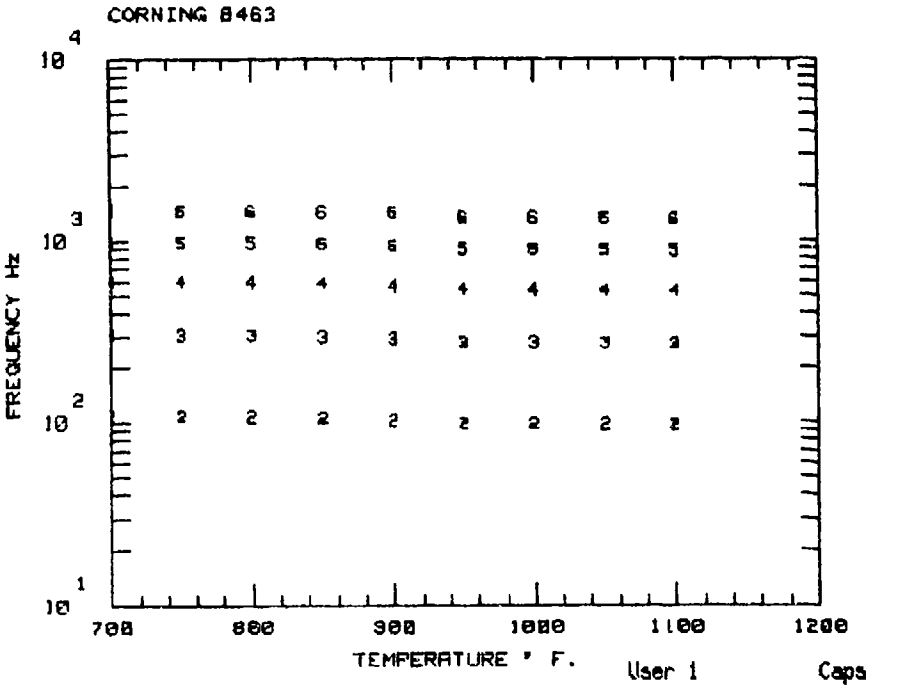
TZERO	ETFROL	SL	SH	FROL	C
914.0	.400	.360	-.400	1.300E+03	.300

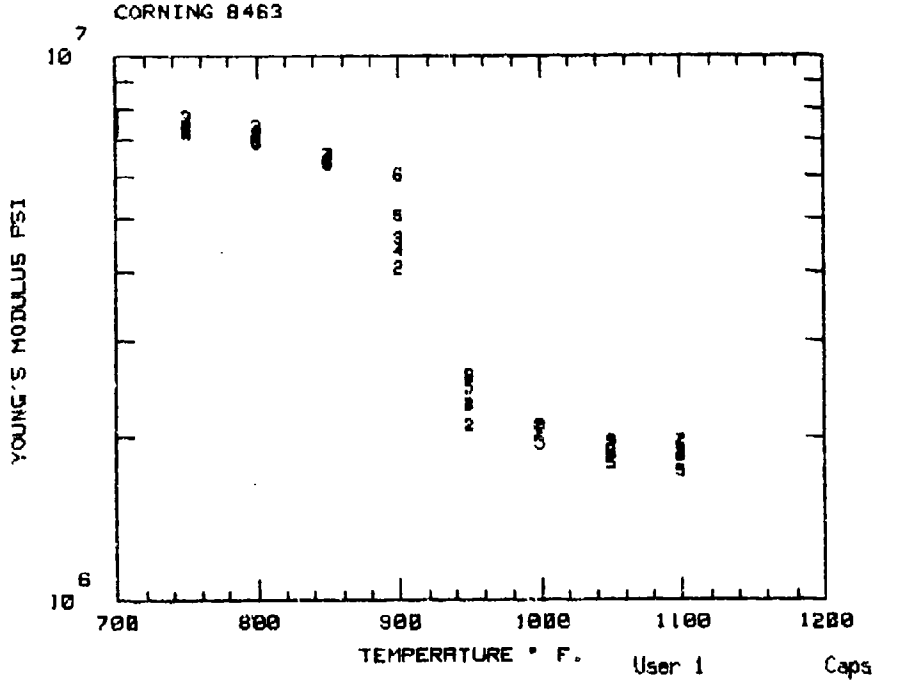
LOG(FR)=LOG(F)-12(T-T0)/(525+T-T0)
A=(LOG(FR)-LOG(FROL))/C

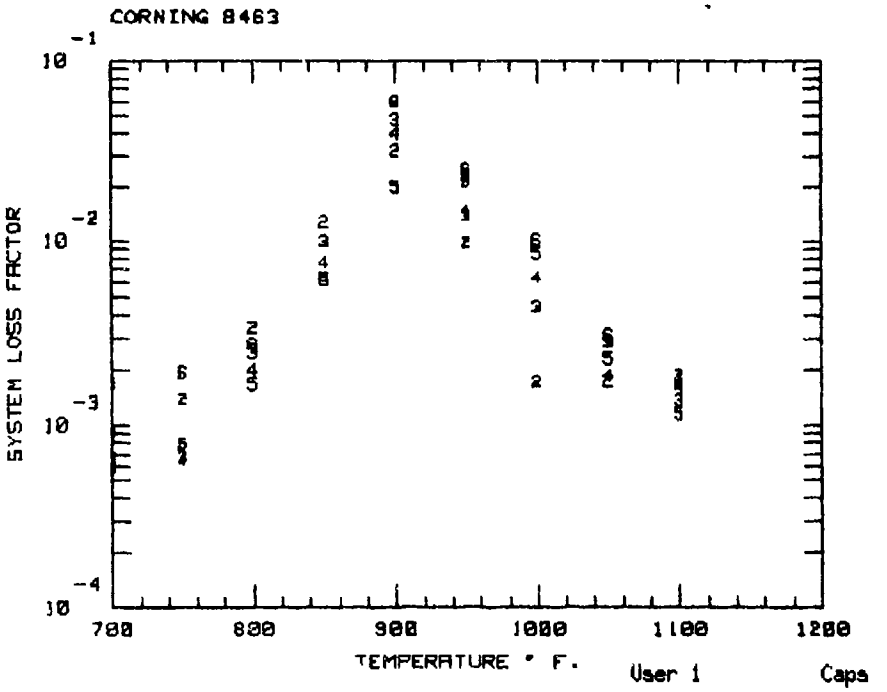
MATERIAL CODE: C_7570
MATERIAL: CORNING 7570
MANUFACTURER: CORNING
REMARKS:
DATE: 13 Jun 1988
ENTERED BY:
BEAM MATERIAL:
BEAM NUMBER:
BEAM TYPE: SANDWICH BEAM
BEAM LENGTH: 0 in
BEAM THICKNESS: 0 in
BEAM DENSITY: 0 lb/cu in
DAMPING MATERIAL THICKNESS: 0 in
DAMPING MATERIAL DENSITY: .3298669 lb/cu in

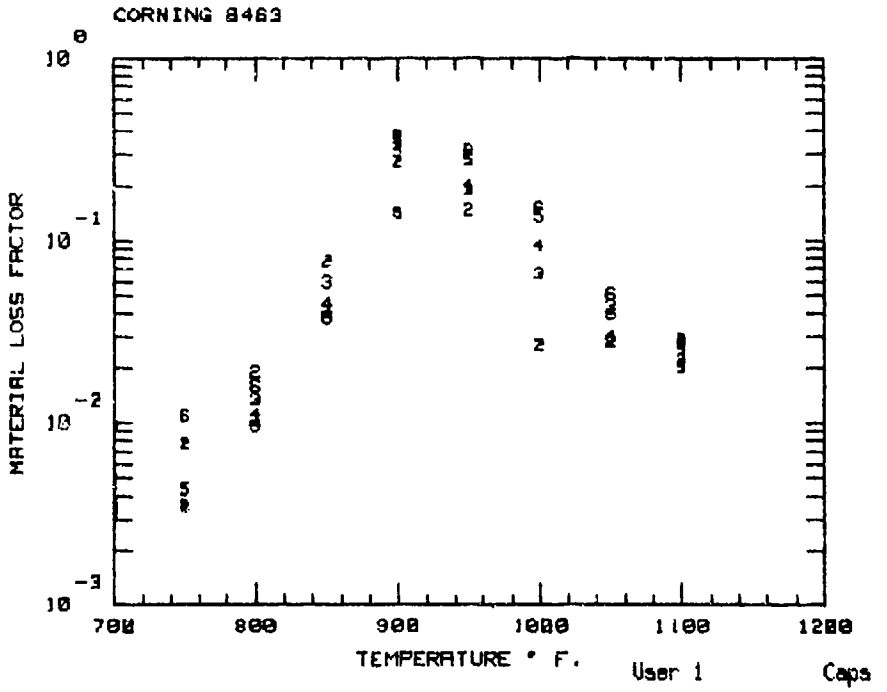
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	SHEAR MODULUS PSI	MATERIAL LOSS FACTOR
1	+1100	2	100.6	95.5	.001700	7.7751E+05	.054900
2	+1100	3	281.7	267.9	.001200	8.7319E+05	.036600
3	+1099	4	552.1	525.9	.001400	9.5631E+05	.036500
4	+1099	5	912.6	872.3	.001300	1.1340E+06	.030200
5	+1099	6	1363.3	1304.8	.001400	1.2065E+06	.029400
6	+1051	2	101.3	96.2	.001900	7.9104E+05	.060600
7	+1051	3	283.7	269.8	.001500	8.8373E+05	.042500
8	+1051	4	555.9	529.5	.001500	9.6762E+05	.039500
9	+1051	5	918.9	878.0	.001500	1.1308E+06	.034800
10	+1051	6	1372.7	1313.2	.001600	1.1995E+06	.034800
11	+1000	2	101.9	96.8	.002100	8.3420E+05	.065100
12	+1000	3	285.4	271.6	.001800	9.3162E+05	.052100
13	+1000	4	559.3	533.0	.002200	1.0053E+06	.057200
14	+1000	5	924.5	884.1	.002900	1.1896E+06	.064000
15	+1000	6	1381.1	1322.5	.003200	1.2651E+06	.068500
16	+950	2	102.5	97.5	.003300	8.8756E+05	0.000000
17	+950	4	562.6	537.0	.008000	1.1023E+06	.194000
18	+950	5	929.3	891.9	.014700	1.3979E+06	.285900
19	+950	6	1389.2	1335.8	.014400	1.5071E+06	.262500
20	+900	2	103.2	98.6	.019200	1.1585E+06	.450900
21	+900	4	566.2	547.3	.026800	1.8147E+06	.415800
22	+900	5	935.9	913.0	.028800	2.3363E+06	.356400
23	+900	6	1398.0	1373.1	.029600	2.7013E+06	.319300
24	+851	4	569.1	568.7	.019800	3.8200E+06	.162600
25	+851	5	940.7	946.2	.017300	4.2339E+06	.130700
26	+851	6	1405.3	1420.1	.013300	4.5501E+06	.095200
27	+801	2	104.3	105.6	.009700	4.6973E+06	.068100
28	+801	3	292.0	295.8	.007600	4.7364E+06	.052900
29	+801	4	572.3	580.4	.005800	4.8206E+06	.040000
30	+801	5	946.0	963.8	.004500	5.5613E+06	.029800
31	+801	6	1413.7	1441.3	.003900	5.1966E+06	.025700

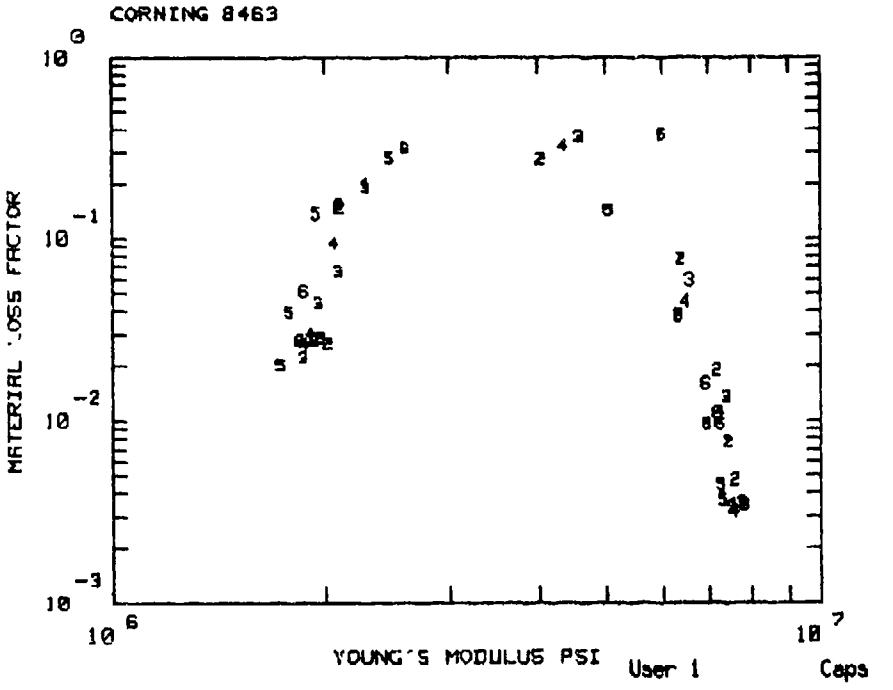

CORNING 8463
TEMPERATURE DEG F (DELTA=25)
1020 970 920 870 820 770
MODULUS
LOSS FACTOR
YOUNG'S MODULUS psi
FREQUENCY HERTZ
REDUCED FREQUENCY HERTZ


CORNING 8463
FREQUENCY Hz
TEMPERATURE ° F.
User 1
Caps


CORNING 8463
YOUNG'S MODULUS PSI
TEMPERATURE ° F.
User 1
Caps


CORNING 8463
SYSTEM LOSS FACTOR
10^-1
10^-2
10^-3
10^-4
700
800
900
1000
1100
1200
TEMPERATURE ° F.
User 1
Caps


CORNING 8463
MATERIAL LOSS FACTOR
10^0
10^-1
10^-2
10^-3
700
800
900
1000
1100
1200
TEMPERATURE ° F.
User 1
Caps



MATERIAL CODE: C_8463
MATERIAL: CORNING # 8463

UNITS ARE ENGLISH
LOG(M)=LOG(ML)+(2LOG(MROM/ML))/(1+(FQROM/FR)^SLOPE)

TZERO	FQROM	MROM	SLOPE	ML
800.0	3.000E+00	3.600E+06	0.950	1.750E+06

LOG(ETA)=LOG(ETFROL)+((SH+SL)A+(SL-SH)(1-SQR(1+A^2)))C/2

TZERO	ETFROL	SL	SH	FROL	C
800.0	.400	.700	-.690	3.000E+00	.250

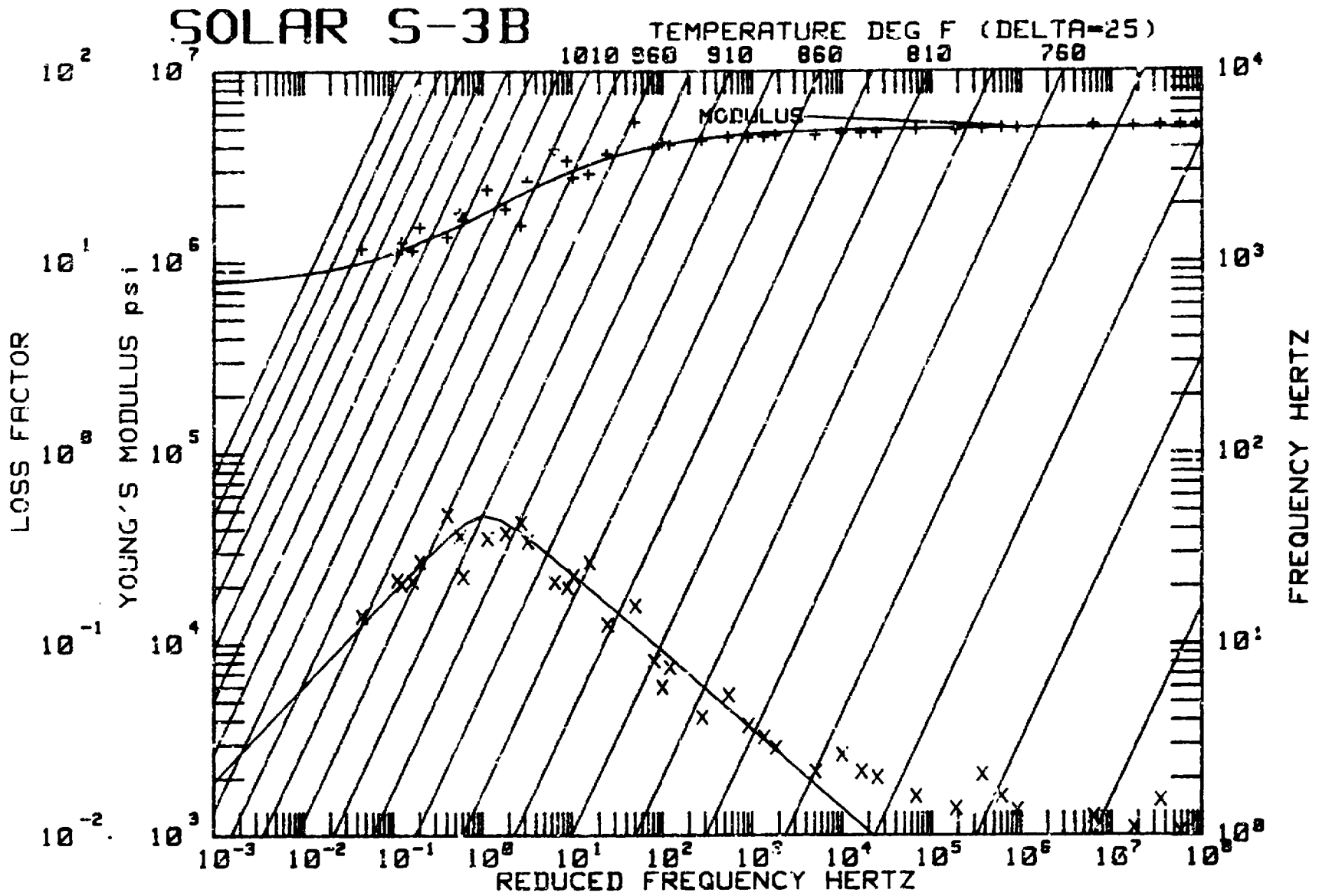
LOG(FR)=LOG(F)-12(T-T0)/(525+T-T0)
A=(LOG(FR)-LOG(FROL))/C

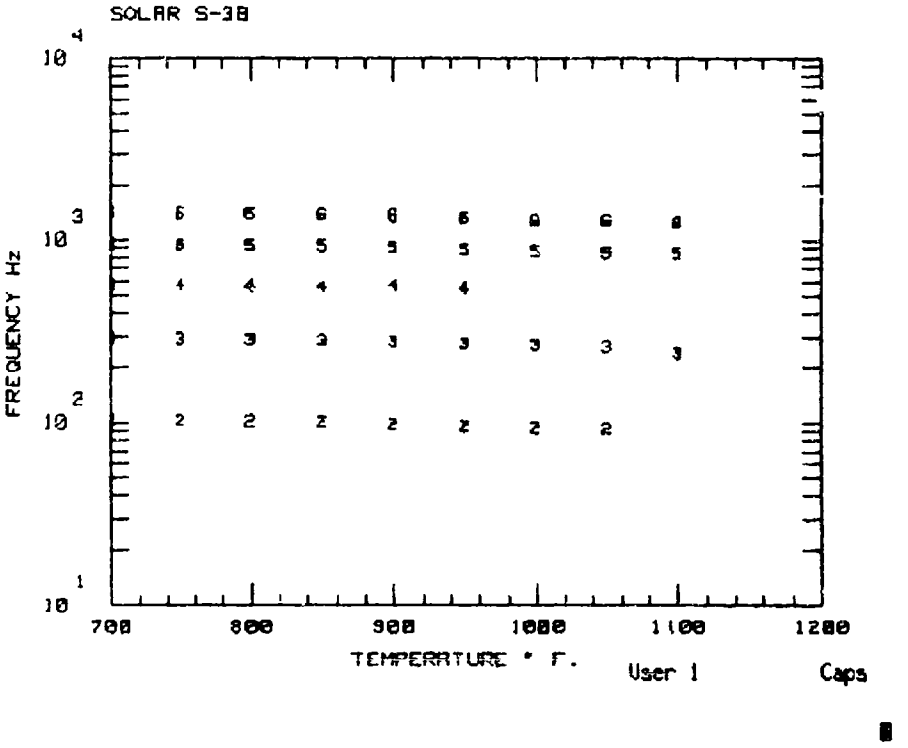
MATERIAL CODE: C_8463
MATERIAL: CORNING # 8463
MANUFACTURER: CORNING GLASS
REMARKS: RETEST 1000 HRS/1000°F
DATE: 2 Feb 1987
ENTERED BY: HDW
BEAM MATERIAL: HAYNES #188
BEAM NUMBER: 01-37-1
BEAM TYPE: FREE LAYER ONE SIDE
BEAM LENGTH: 8.23 in
BEAM THICKNESS: .0372 in
BEAM DENSITY: .33 lb/cu in
DAMPING MATERIAL THICKNESS: .0083 in
DAMPING MATERIAL DENSITY: .225 lb/cu in

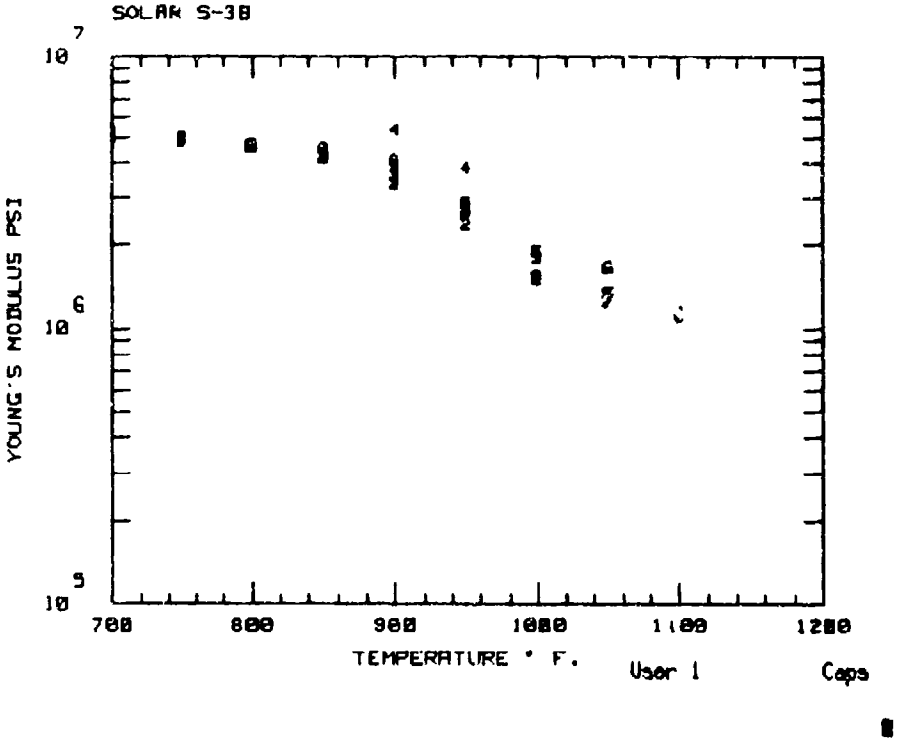
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	YOUNG'S MODULUS PSI	MATERIAL LOSS FACTOR
1	+700	2	104.5	108.5	.000875	7.6015E+06	.004749
2	+700	3	292.2	304.2	.000644	7.8152E+06	.003420
3	+700	4	573.4	595.0	.000586	7.5671E+06	.003191
4	+700	5	950.4	982.7	.000651	7.3183E+06	.003645
5	+700	6	1421.8	1467.7	.001696	7.2337E+06	.009620
6	+750	2	104.1	107.9	.001399	7.4430E+06	.007665
7	+750	3	290.8	302.7	.000667	7.7447E+06	.003541
8	+750	4	570.6	592.2	.000643	7.5116E+06	.003495
9	+750	5	946.0	978.3	.000787	7.2681E+06	.004398
10	+750	6	1415.0	1461.1	.001936	7.1858E+06	.010958
11	+800	2	103.5	107.1	.003400	7.1828E+06	.018952
12	+800	3	289.4	300.3	.002470	7.4048E+06	.013445
13	+800	4	567.7	587.7	.001990	7.2374E+06	.011027
14	+800	5	941.6	970.7	.001670	6.9421E+06	.009583
15	+800	6	1408.2	1450.4	.002760	6.9125E+06	.015957
16	+850	2	103.0	105.6	.012700	6.3805E+06	.076651
17	+850	3	288.0	296.0	.010000	6.5720E+06	.058928
18	+850	4	564.8	579.6	.007560	6.4779E+06	.045077
19	+850	5	937.0	959.3	.006210	6.3402E+06	.037824
20	+850	6	1401.2	1433.9	.006102	6.3380E+06	.037338
21	+900	2	102.5	101.8	.031820	4.0559E+06	.272014
22	+900	3	286.5	286.9	.046990	4.5856E+06	.362495
23	+900	4	561.9	560.6	.039610	4.3491E+06	.319352
24	+900	5	932.2	938.8	.019810	5.0466E+06	.142611
25	+900	6	1394.0	1421.8	.059360	6.0219E+06	.374537
26	+950	2	101.9	98.3	.009864	2.1048E+06	.147274
27	+950	3	284.9	275.8	.013778	2.2936E+06	.189947
28	+950	4	558.8	540.9	.014600	2.2918E+06	.201750
29	+950	5	927.4	900.0	.021220	2.4745E+06	.275823
30	+950	6	1386.5	1348.0	.024920	2.6065E+06	.310853
31	+1000	2	101.3	97.7	.001730	2.0223E+06	.026494
32	+1000	3	283.3	273.5	.004420	2.0926E+06	.065494

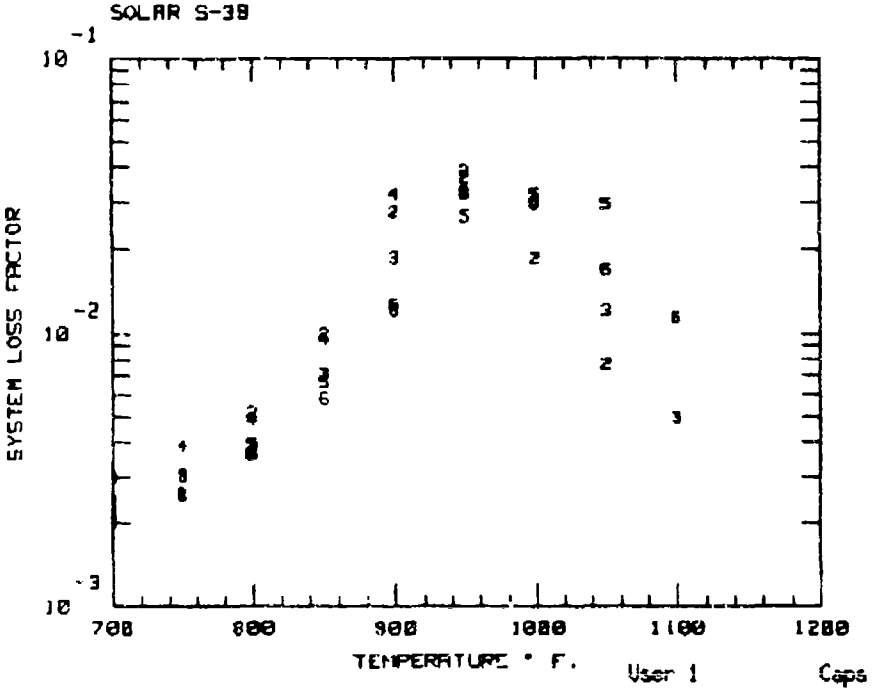
MATERIAL CODE: C_8463
MATERIAL: CORNING # 8463
MANUFACTURER: CORNING GLASS
REMARKS: RETEST 1000 HRS/1000°F
DATE: 2 Feb 1987
ENTERED BY: HDW
BEAM MATERIAL: HAYNES #188
BEAM NUMBER: 01-37-1
BEAM TYPE: FREE LAYER ONE SIDE
BEAM LENGTH: 8.23 in
BEAM THICKNESS: .0372 in
BEAM DENSITY: .33 lb/cu in
DAMPING MATERIAL THICKNESS: .0083 in
DAMPING MATERIAL DENSITY: .225 lb/cu in

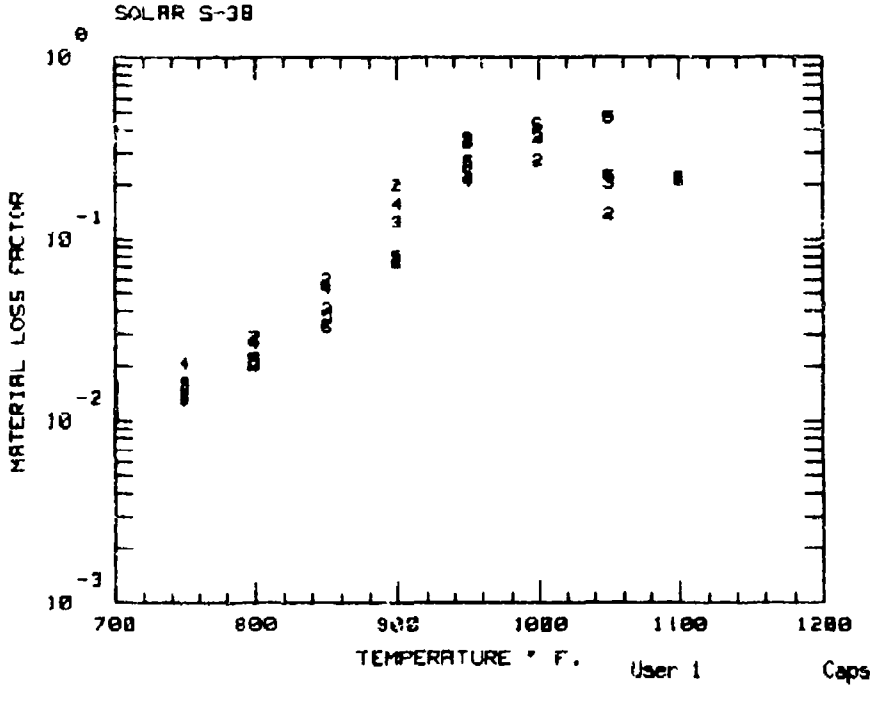
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	YOUNG'S MODULUS PSI	MATERIAL LOSS FACTOR
33	+1000	4	555.6	536.1	.006240	2.0692E+06	.093539
34	+1000	5	922.2	887.9	.008560	1.9494E+06	.136434
35	+1000	6	1378.7	1330.4	.010150	2.1003E+06	.151955
36	+1050	2	100.7	97.0	.001753	1.9345E+06	.027648
37	+1050	3	281.6	271.4	.002837	1.9621E+06	.044073
38	+1050	4	552.3	531.8	.001862	1.9132E+06	.029642
39	+1050	5	916.8	880.7	.002305	1.7849E+06	.039385
40	+1050	6	1370.5	1318.2	.003095	1.8741E+06	.050822
41	+1100	2	99.8	96.2	.001870	1.9730E+06	.028505
42	+1100	3	279.6	269.2	.001375	1.8691E+06	.022036
43	+1100	4	547.8	527.4	.001631	1.8745E+06	.026061
44	+1100	5	909.6	873.4	.001156	1.7320E+06	.020013
45	+1100	6	1358.9	1307.1	.001683	1.8456E+06	.027593

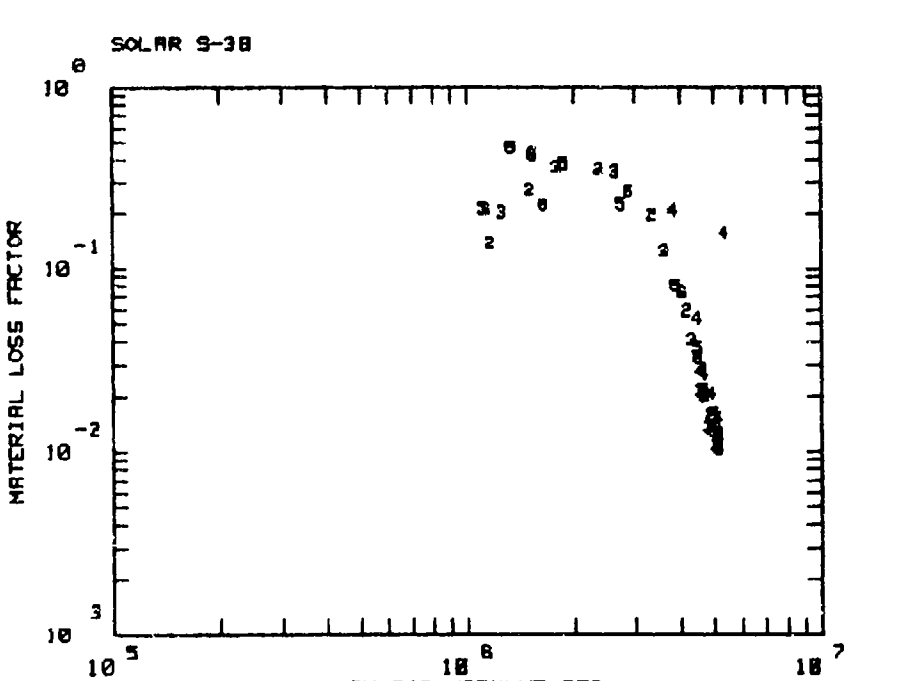

SOLAR S-3B
TEMPERATURE DEG F (DELTA=25)
1010 960 910 860 810 760
MODULUS
LOSS FACTOR
YOUNG'S MODULUS psi
FREQUENCY HERTZ
REDUCED FREQUENCY HERTZ


SOLAR S-3B
FREQUENCY Hz
10^4
10^3
10^2
10^1
700
800
900
1000
1100
1200
TEMPERATURE ° F.
User 1
Caps


SOLAR S-3B
YOUNG'S MODULUS PSI
10^7
10^6
10^5
700
800
900
1000
1100
1200
TEMPERATURE ° F.
User 1
Caps


SOLAR S-38
SYSTEM LOSS FACTOR
10^-1
10^-2
10^-3
700
800
900
1000
1100
1200
TEMPERATURE ° F.
User 1
Caps


SOLAR S-38
MATERIAL LOSS FACTOR
10^0
10^-1
10^-2
10^-3
700
800
900
1000
1100
1200
TEMPERATURE ° F.
User 1
Caps



MATERIAL CODE: SOL_3B
MATERIAL: SOLAR S-3B

UNITS ARE ENGLISH
LOG(M)=LOG(ML)+(2LOG(MROM/ML))/(1+(FQROM/FR)^SLOPE)

TZERO	FQROM	MROM	SLOPE	ML
850.0	1.400E+00	1.950E+06	0.500	7.500E+05

LOG(ETA)=LOG(ETFROL)+((SH+SL)A+(SL-SH)(1-SQR(1+A^2)))C/2

TZERO	ETFROL	SL	SH	FROL	C
850.0	.470	.500	-.410	1.000E+00	.250

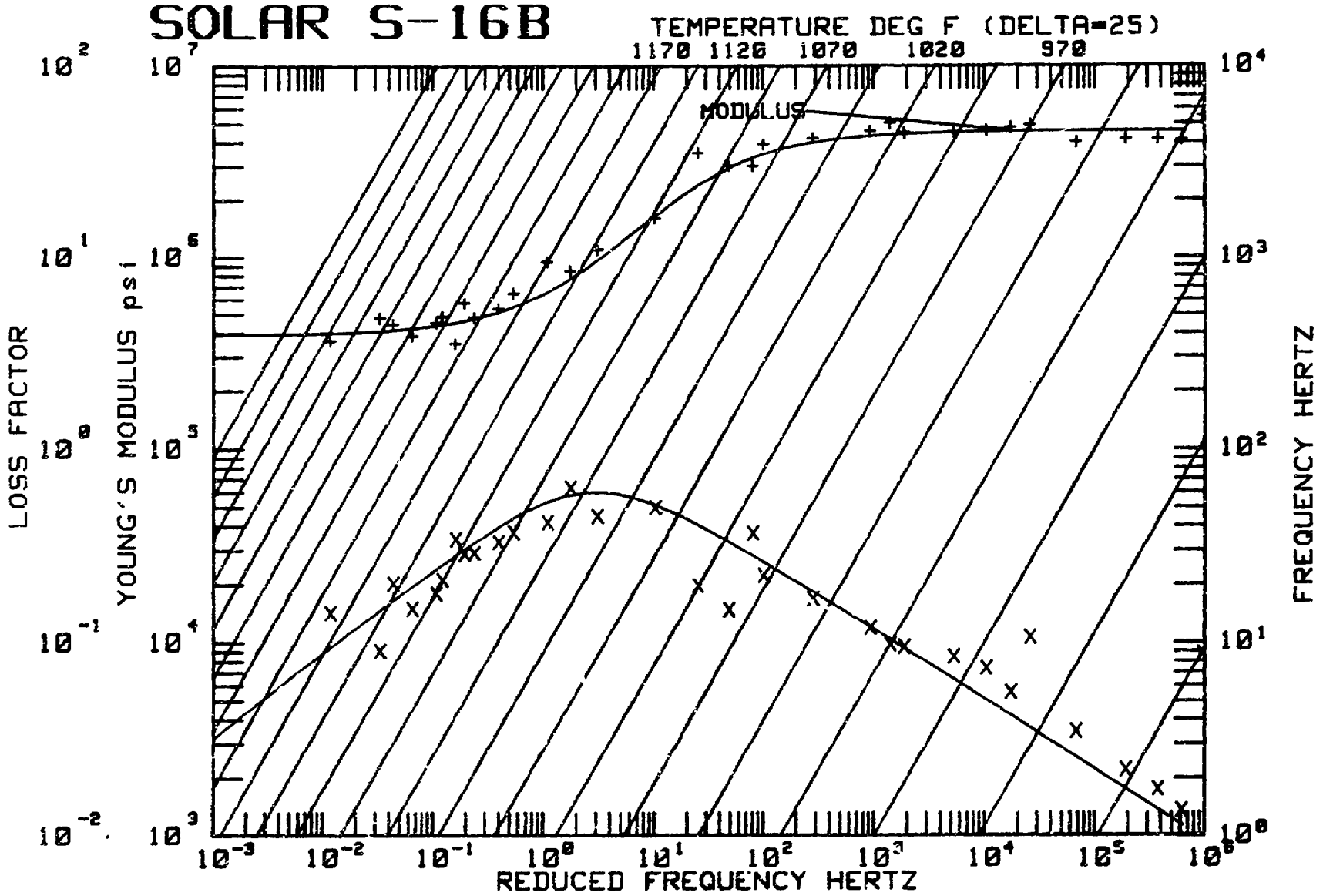
LOG(FR)=LOG(F)-12(T-T0)/(525+T-T0)
A=(LOG(FR)-LOG(FROL))/C

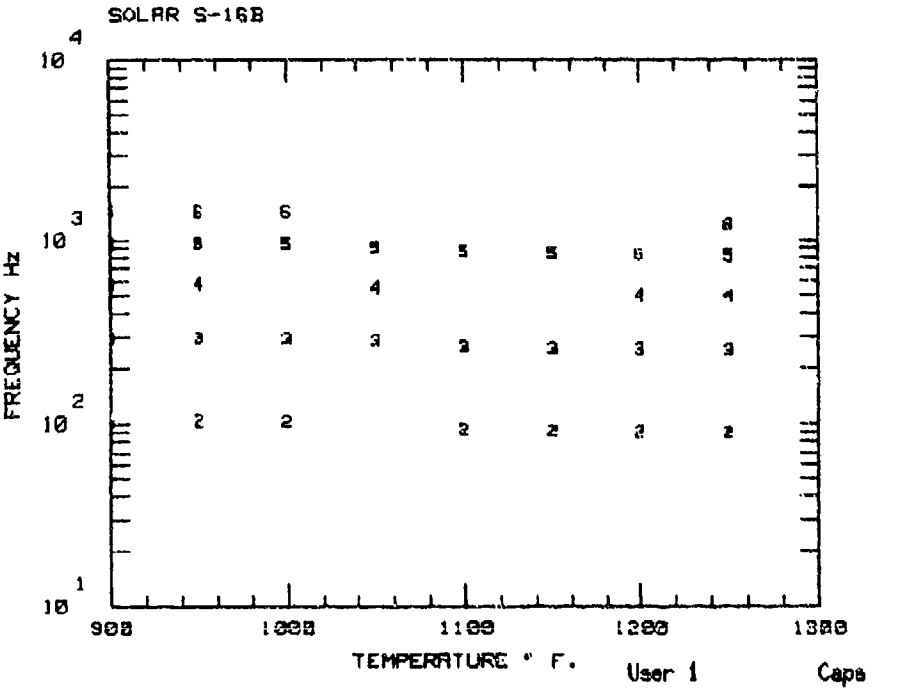
MATERIAL CODE: SOL_3B
MATERIAL: SOLAR S-3B
MANUFACTURER: SOLAR TURBINES
REMARKS: RETEST 1000 HRS/1000°F
DATE: 3 Feb 1987
ENTERED BY: HDW
BEAM MATERIAL: HAYNES #188
BEAM NUMBER: 01-89-1
BEAM TYPE: FREE LAYER BOTH SIDES
BEAM LENGTH: 9 in
BEAM THICKNESS: .0427 in
BEAM DENSITY: .33 lb/cu in
DAMPING MATERIAL THICKNESS: .0072 in
DAMPING MATERIAL DENSITY: .13 lb/cu in

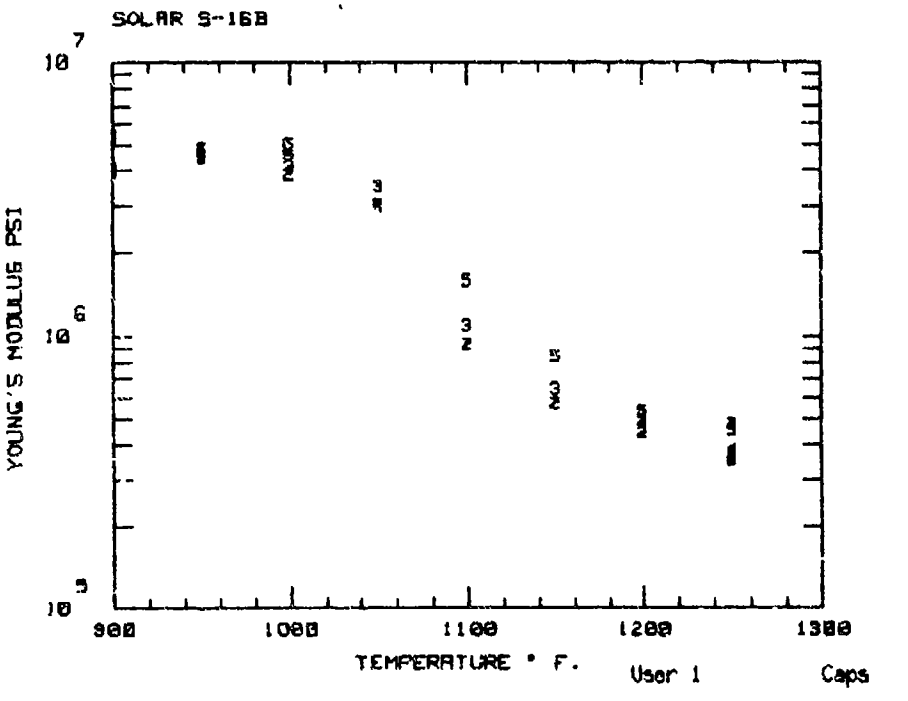
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	YOUNG'S MODULUS PSI	MATERIAL LOSS FACTOR
1	+700	2	99.1	103.8	.002420	5.1511E+06	.012369
2	+700	3	278.2	290.7	.002080	5.0544E+06	.010844
3	+700	4	545.3	570.7	.002940	5.1303E+06	.015152
4	+700	5	902.1	941.2	.002010	5.1470E+06	.010344
5	+700	6	1349.0	1411.2	.002310	5.1452E+06	.011948
6	+750	2	98.8	103.1	.003010	4.9134E+06	.015907
7	+750	3	277.1	288.7	.002560	4.8516E+06	.013710
8	+750	4	543.2	566.7	.003900	4.9259E+06	.020642
9	+750	5	898.9	938.3	.003010	4.9652E+06	.015856
10	+750	6	1344.8	1402.3	.002520	4.9450E+06	.013392
11	+800	2	98.4	102.1	.005140	4.5964E+06	.028510
12	+800	3	275.9	286.3	.003840	4.5944E+06	.021354
13	+800	4	540.8	562.1	.004800	4.6894E+06	.026256
14	+800	5	895.5	930.6	.003910	4.7001E+06	.021404
15	+800	6	1339.5	1391.4	.003630	4.7046E+06	.019962
16	+850	2	98.1	101.0	.009900	4.1867E+06	.058959
17	+850	3	274.7	283.6	.007050	4.3155E+06	.040963
18	+850	4	538.4	557.8	.009500	4.4864E+06	.053489
19	+850	5	891.7	923.4	.006560	4.4798E+06	.037096
20	+850	6	1333.6	1381.3	.005720	4.5177E+06	.032283
21	+900	2	97.6	98.9	.027600	3.3633E+06	.196194
22	+900	3	273.4	278.6	.018740	3.6352E+06	.124745
23	+900	4	535.9	565.0	.032210	5.3352E+06	.156467
24	+900	5	887.5	909.0	.012760	3.8932E+06	.080458
25	+900	6	1327.6	1364.0	.012170	4.0714E+06	.074318
26	+950	2	97.1	96.4	.036930	2.3799E+06	.352474
27	+950	3	271.9	271.5	.038040	2.6351E+06	.340460
28	+950	4	533.2	546.2	.033140	3.8460E+06	.208703
29	+950	5	883.1	883.6	.026480	2.7434E+06	.223895
30	+950	6	1321.0	1324.8	.032300	2.8691E+06	.264044
31	+1000	2	96.5	94.0	.018700	1.5098E+06	.267668
32	+1000	3	270.0	264.8	.029790	1.7964E+06	.362448

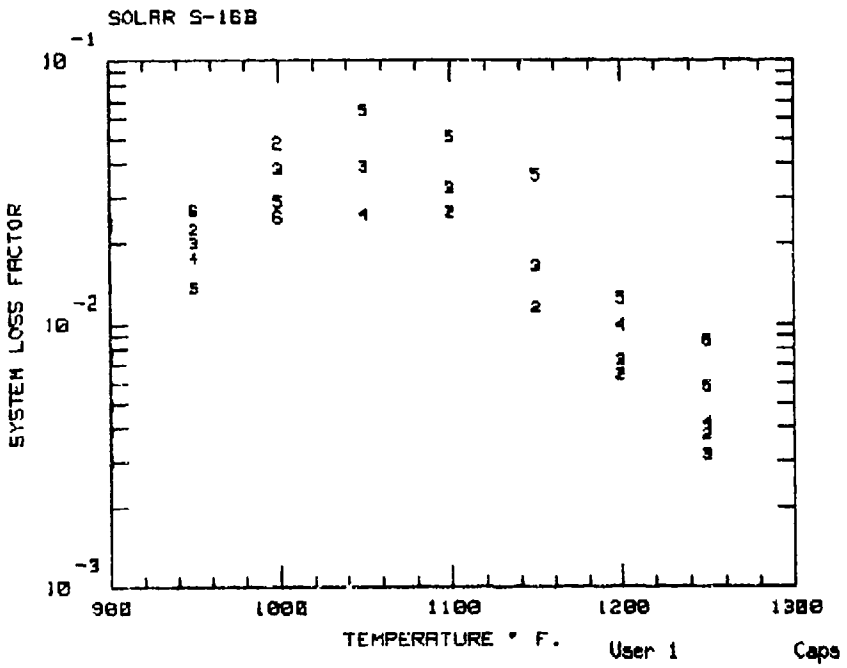
MATERIAL CODE: SOL_3B
MATERIAL: SOLAR S-3B
MANUFACTURER: SOLAR TURBINES
REMARKS: RETEST 1000 HRS/1000°F
DATE: 3 Feb 1987
ENTERED BY: HDW
BEAM MATERIAL: HAYNES #188
BEAM NUMBER: 01-89-1
BEAM TYPE: FREE LAYER BOTH SIDES
BEAM LENGTH: 9 in
BEAM THICKNESS: .0427 in
BEAM DENSITY: .33 lb/cu in
DAMPING MATERIAL THICKNESS: .0072 in
DAMPING MATERIAL DENSITY: .13 lb/cu in

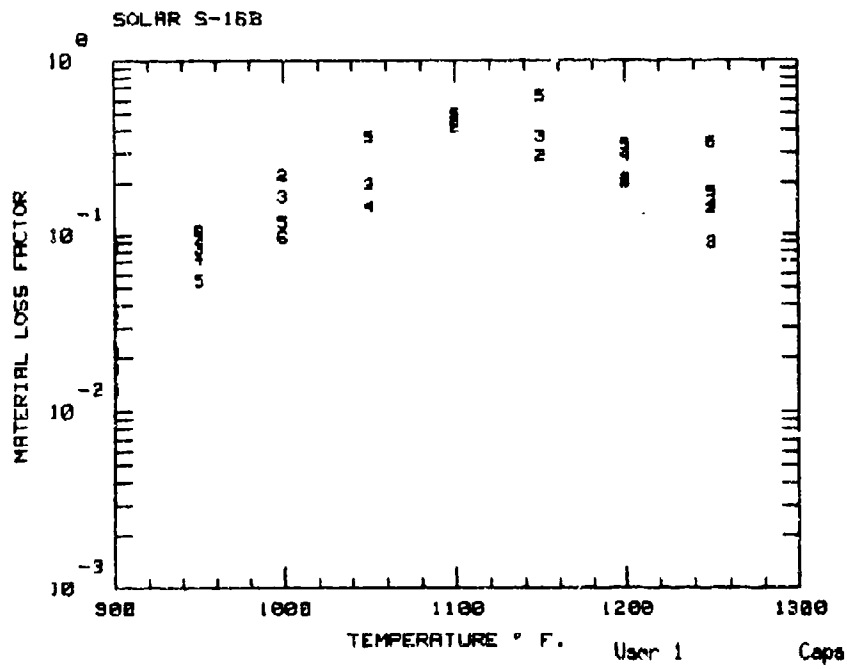
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	YOUNG'S MODULUS PSI	MATERIAL LOSS FACTOR
33	+1000	5	878.5	862.9	.031980	1.8832E+06	.375669
34	+1000	6	1314.1	1280.4	.029900	1.5378E+06	.425968
35	+1050	2	95.9	92.7	.007660	1.1659E+06	.138052
36	+1050	3	268.7	260.3	.012060	1.2576E+06	.202606
37	+1050	5	873.1	847.3	.029400	1.3372E+06	.468936
38	+1050	6	1306.0	1275.5	.016900	1.6549E+06	.222369
39	+1100	3	266.9	240.2	.004900	0.0000E+00	0.000000
40	+1100	5	867.0	837.1	.011350	1.1065E+06	.213543
41	+1100	6	1297.0	1253.0	.011410	1.1381E+06	.210339

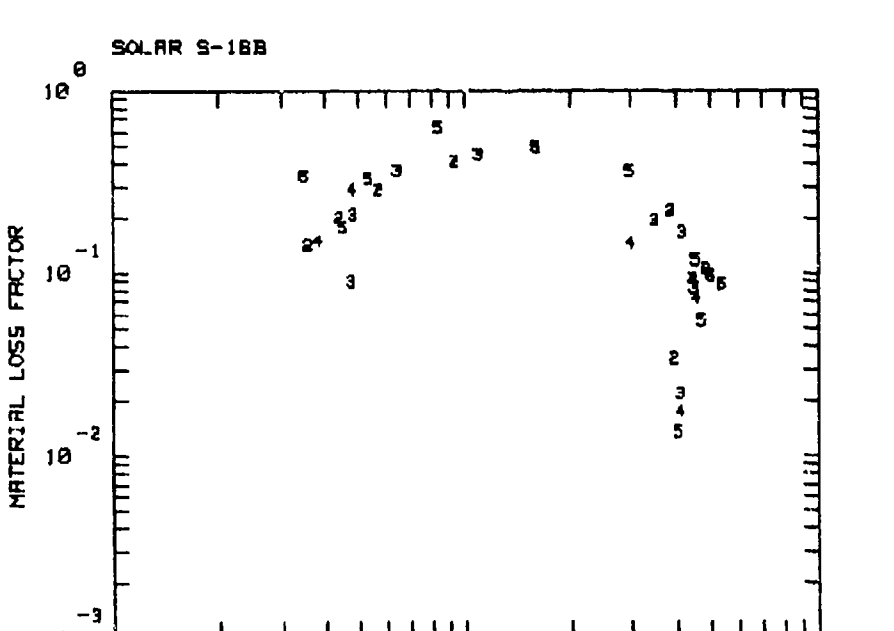

SOLAR S-16B
TEMPERATURE DEG F (DELTA=25)
1170 1120 1070 1020 970
MODULUS
LOSS FACTOR
YOUNG'S MODULUS psi
FREQUENCY HERTZ
REDUCED FREQUENCY HERTZ


SOLAR S-16B
FREQUENCY Hz
10^4
10^3
10^2
10^1
900
1000
1100
1200
1300
TEMPERATURE ° F.
User 1
Caps


SOLAR S-16B
YOUNG'S MODULUS PSI
10^7
10^6
10^5
900
1000
1100
1200
1300
TEMPERATURE ° F.
User 1
Caps


SOLAR S-16B
SYSTEM LOSS FACTOR
10^-1
10^-2
10^-3
900
1000
1100
1200
1300
TEMPERATURE ° F.
User 1
Caps


SOLAR S-16B
MATERIAL LOSS FACTOR
10^0
10^-1
10^-2
10^-3
900
1000
1100
1200
1300
TEMPERATURE ° F.
User 1
Caps



MATERIAL CODE: S_16_B
MATERIAL: SOLAR S-16B

UNITS ARE ENGLISH
LOG(M)=LOG(ML)+(2LOG(MROM/ML))/(1+(FQROM/FR)^SLOPE)

TZERO	FQROM	MROM	SLOPE	ML
1000.0	6.500E+00	1.350E+06	0.750	3.950E+05

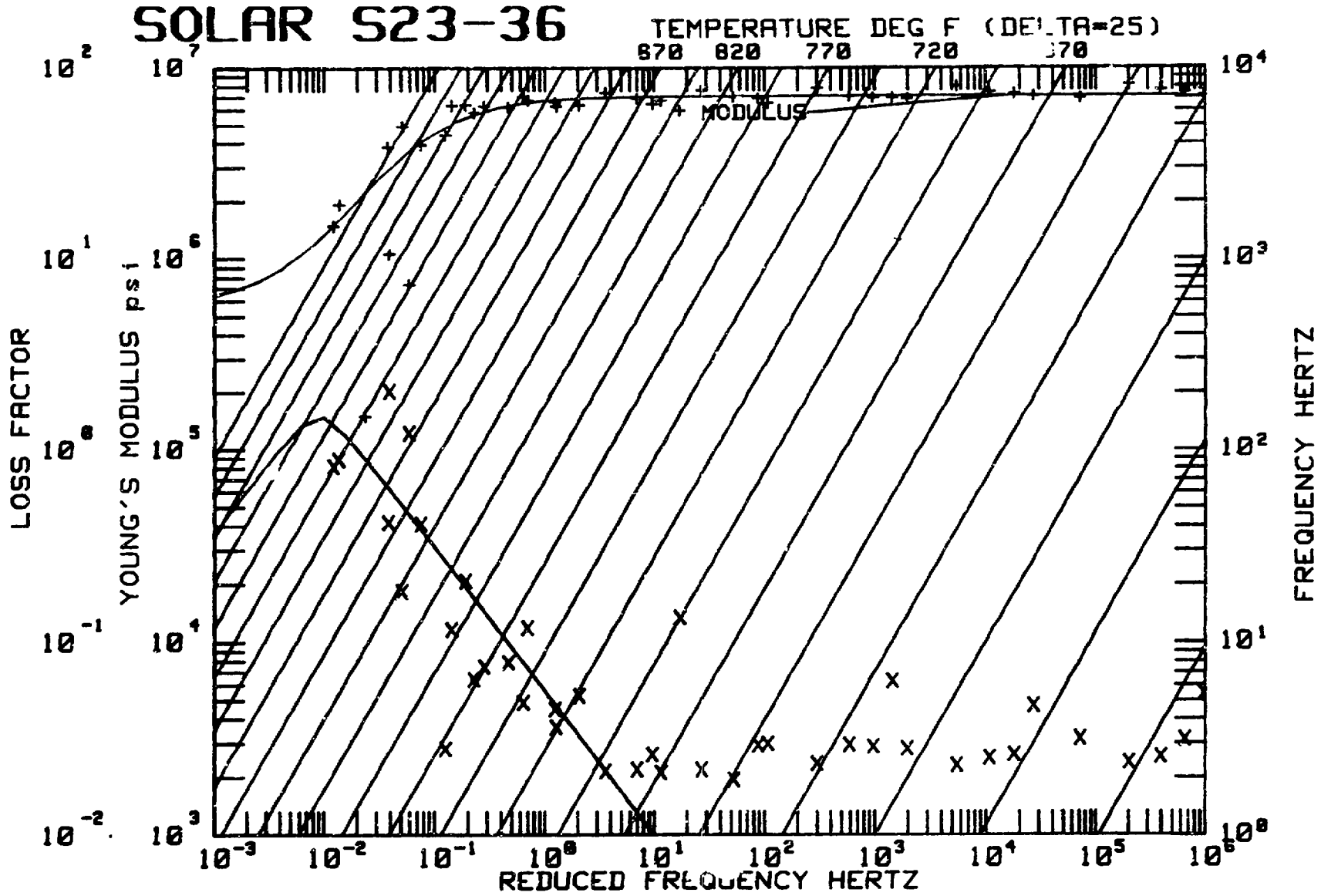
LOG(ETA)=LOG(ETFROL)+((SH+SL)A+(SL-SH)(1-SQR(1+A^2)))C/2

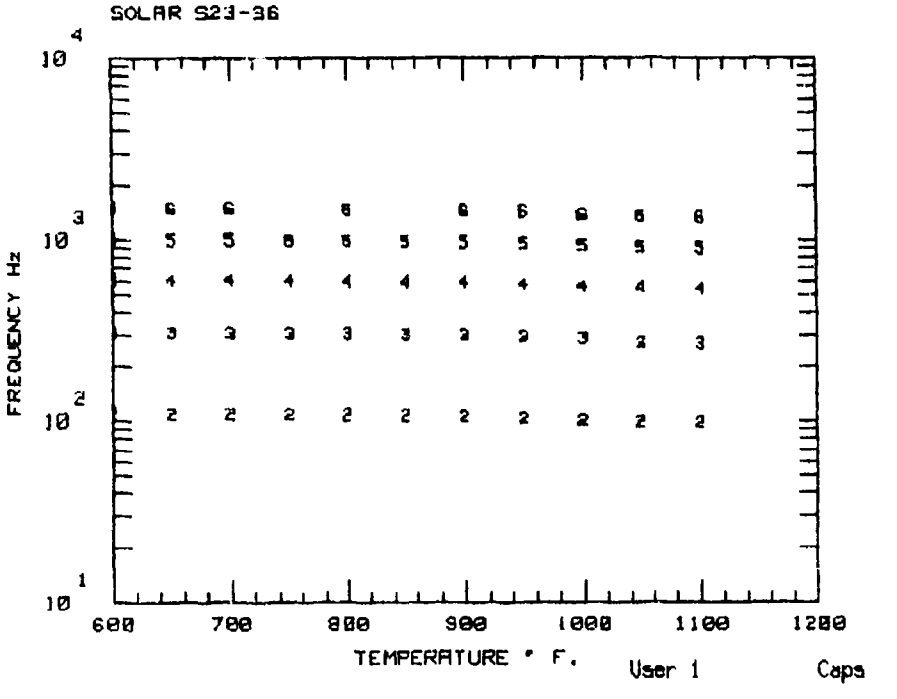
TZERO	ETFROL	SL	SH	FROL	C
1000.0	.600	.450	-.370	2.500E+00	.700

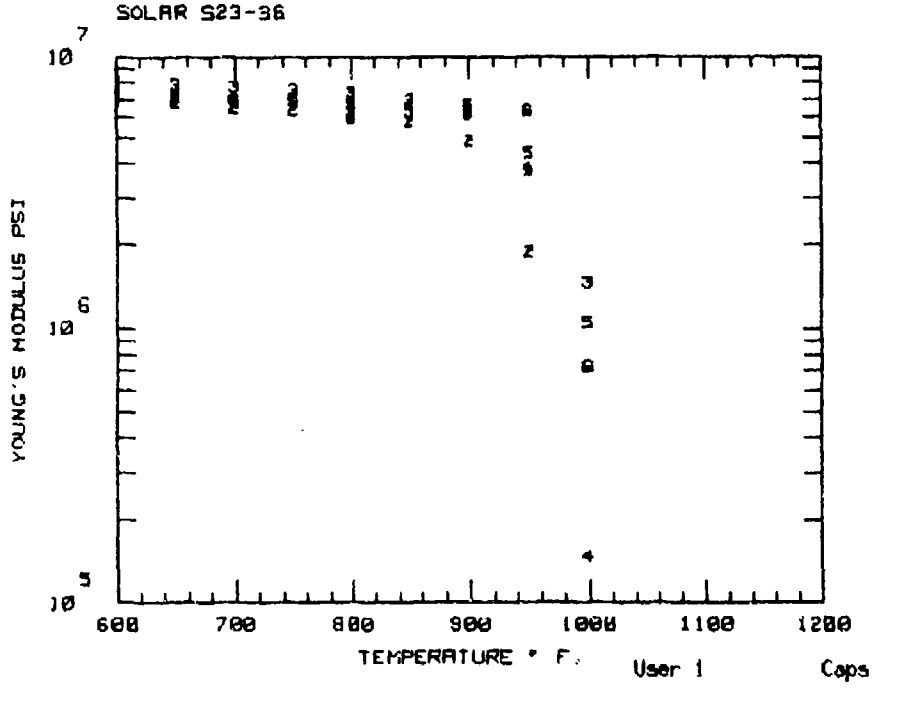
LOG(FR)=LOG(F)-12(T-T0)/(525+T-T0)
A=(LOG(FR)-LOG(FROL))/C

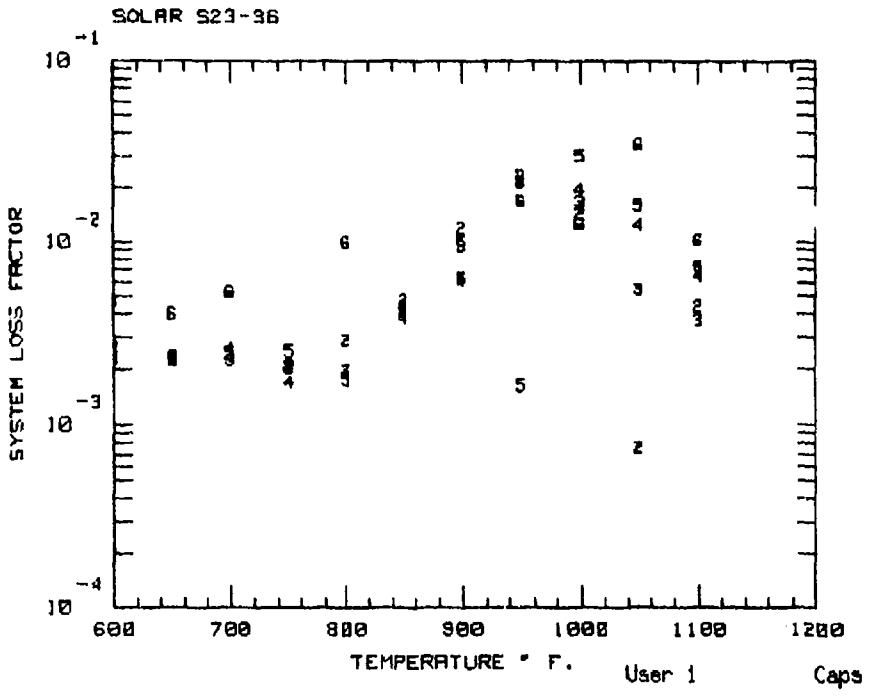
MATERIAL CODE: S_16_B
MATERIAL: SOLAR S-16B
MANUFACTURER: SOLAR TURBINES
REMARKS: RETEST 1000 HRS/1000°F
DATE: 2 Feb 1987
ENTERED BY: HDW
BEAM MATERIAL: HAYNES #188
BEAM NUMBER: 01-88
BEAM TYPE: FREE LAYER BOTH SIDES
BEAM LENGTH: 9.04 in
BEAM THICKNESS: .0427 in
BEAM DENSITY: .33 lb/cu in
DAMPING MATERIAL THICKNESS: .0095 in
DAMPING MATERIAL DENSITY: .0867 lb/cu in

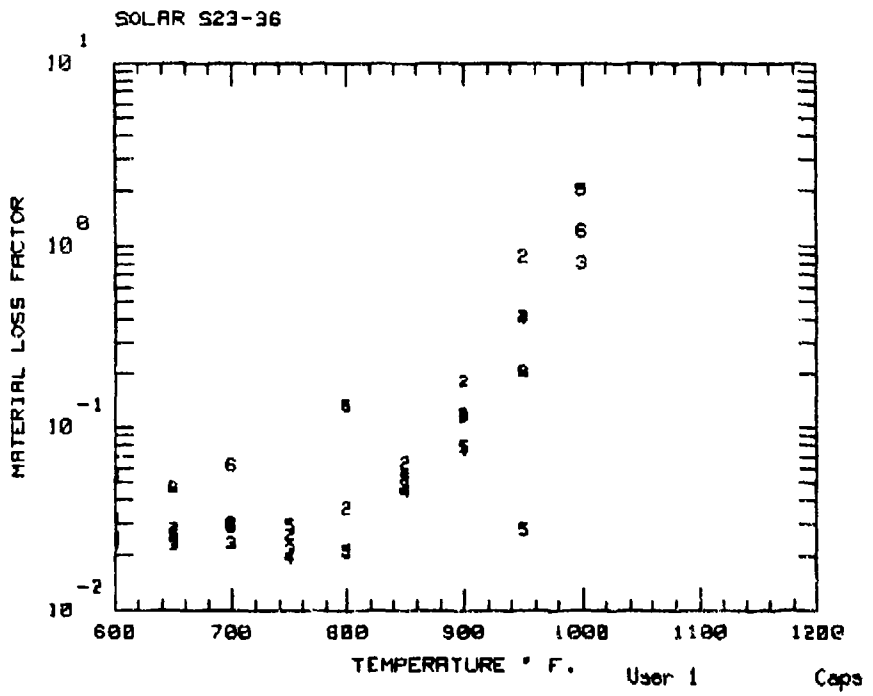
INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	YOUNG'S MODULUS PSI	MATERIAL LOSS FACTOR
1	+900	2	96.5	103.4	.007540	3.9692E+06	.034351
2	+900	3	270.9	291.2	.004880	4.1139E+06	.021700
3	+900	4	531.3	570.9	.003870	4.1126E+06	.017234
4	+900	5	879.2	943.2	.002970	4.0612E+06	.013380
5	+900	6	1315.8	1460.5	.023700	5.3924E+06	.086724
6	+950	2	96.1	104.4	.022600	4.4486E+06	.093704
7	+950	3	269.9	293.2	.020120	4.4801E+06	.083318
8	+950	4	529.7	576.6	.017690	4.5659E+06	.072391
9	+950	5	876.0	957.4	.013680	4.7221E+06	.054612
10	+950	6	1311.5	1437.3	.026720	4.8642E+06	.104975
11	+1000	2	95.8	102.5	.048100	3.8823E+06	.220241
12	+1000	3	268.7	289.7	.038250	4.1663E+06	.166282
13	+1000	5	872.3	950.0	.028840	4.5493E+06	.117665
14	+1050	3	267.8	283.5	.039150	3.4920E+06	.194460
15	+1050	4	525.1	547.8	.025920	2.9901E+06	.146191
16	+1050	5	869.0	906.0	.064020	2.9778E+06	.362928
17	+1100	2	95.0	92.9	.026370	9.3526E+05	.411721
18	+1100	3	266.6	262.1	.032580	1.0893E+06	.443430
19	+1100	5	865.6	865.0	.050870	1.5921E+06	.491673
20	+1150	2	94.5	91.3	.011490	5.7062E+05	.283745
21	+1150	3	265.1	256.7	.016520	6.4155E+05	.366187
22	+1150	5	860.5	839.0	.036230	8.4245E+05	.622581
23	+1200	2	93.9	90.3	.006390	4.4114E+05	.199888
24	+1200	3	263.2	253.5	.007260	4.8265E+05	.208608
25	+1200	4	516.6	497.5	.009850	4.7901E+05	.286029
26	+1200	5	855.7	825.0	.012410	5.3217E+05	.326421
27	+1250	2	93.2	89.3	.003760	3.6024E+05	.140955
28	+1250	3	260.4	250.8	.003140	4.7561E+05	.089620
29	+1250	4	512.8	492.2	.004190	3.8437E+05	.148417
30	+1250	5	847.8	815.7	.005800	4.4965E+05	.176507
31	+1250	6	1273.8	1220.9	.008580	3.5024E+05	.337792
32	+1000	6	1305.7	1438.0	.025240	5.0090E+06	.096388

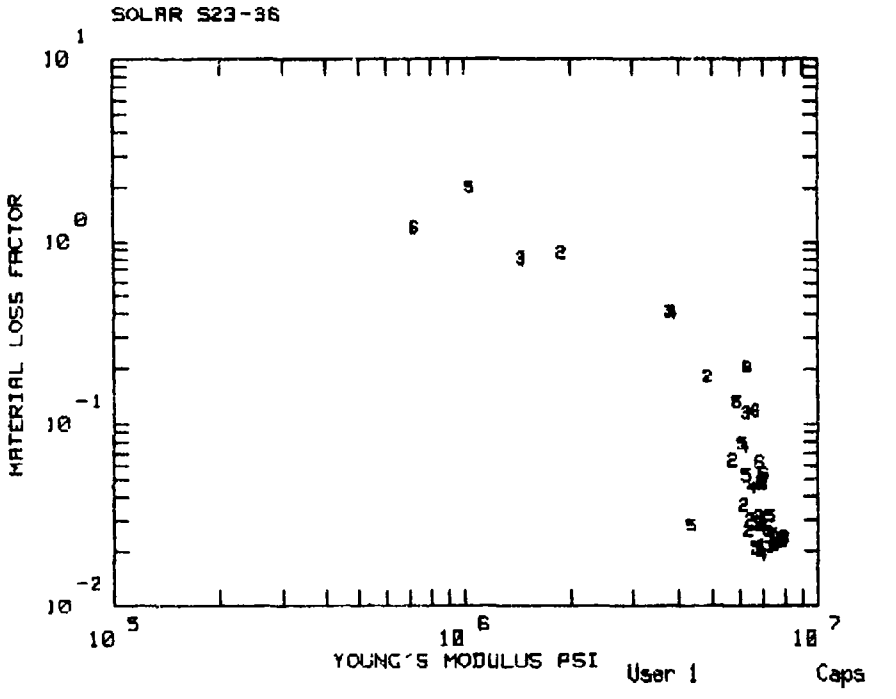

SOLAR S23-36
TEMPERATURE DEG F (DELTA=25)
870 820 770 720 670
MODULUS
LOSS FACTOR
YOUNG'S MODULUS psi
FREQUENCY HERTZ
REDUCED FREQUENCY HERTZ


SOLAR S23-36
FREQUENCY Hz
TEMPERATURE ° F.
User 1
Caps


SOLAR S23-36
YOUNG'S MODULUS PSI
TEMPERATURE ° F.
User 1
Caps


SOLAR S23-36
SYSTEM LOSS FACTOR
10^-1
10^-2
10^-3
10^-4
600
700
800
900
1000
1100
1200
TEMPERATURE ° F.
User 1
Caps


SOLAR S23-36
MATERIAL LOSS FACTOR
10^1
10^0
10^-1
10^-2
600
700
800
900
1000
1100
1200
TEMPERATURE ° F.
User 1
Caps



MATERIAL CODE: S23_36
MATERIAL: SOLAR S23_36

UNITS ARE ENGLISH
LOG(M)=LOG(ML)+(2LOG(MROM/ML))/(1+(FQROM/FR)^SLOPE)

TZERO	FQROM	MROM	SLOPE	ML
700.0	2.000E-02	2.000E+06	0.950	5.000E+05

LOG(ETA)=LOG(ETFROL)+((SH+SL)A+(SL-SH)(1-SQR(1+A^2)))C/2

TZERO	ETFROL	SL	SH	FROL	C
700.0	1.500	.750	-.750	9.000E-03	.150

LOG(FR)=LOG(F)-12(T-T0)/(525+T-T0)
A=(LOG(FR)-LOG(FROL))/C

MATERIAL CODE: S23_36
MATERIAL: SOLAR S23_36
MANUFACTURER: SOLAR TURBINES
REMARKS: RETEST 1000 HRS/1000°F
DATE: 2 Feb 1987
ENTERED BY: HDW
BEAM MATERIAL: HAYNES #188
BEAM NUMBER: 01-42
BEAM TYPE: FREE LAYER BOTH SIDES
BEAM LENGTH: 8.219 in
BEAM THICKNESS: .0372 in
BEAM DENSITY: .33 lb/cu in
DAMPING MATERIAL THICKNESS: .0023 in
DAMPING MATERIAL DENSITY: .0795 lb/cu in

INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	YOUNG'S MODULUS PSI	MATERIAL LOSS FACTOR
1	+600	2	106.2	109.4	.002650	6.8152E+06	.031459
2	+600	3	297.4	308.5	.002310	8.0215E+06	.023652
3	+600	4	583.5	603.3	.002320	7.4560E+06	.025313
4	+600	5	967.7	999.1	.002780	7.3106E+06	.031214
5	+600	6	1448.1	1492.3	.004630	7.0539E+06	.054066
6	+650	2	105.8	109.0	.002350	6.7683E+06	.027882
7	+650	3	296.2	307.2	.002210	7.8938E+06	.022791
8	+650	4	581.2	600.6	.002260	7.3420E+06	.024948
9	+650	5	964.0	994.9	.002290	7.1796E+06	.025958
10	+650	6	1442.5	1486.3	.003980	6.9666E+06	.046676
11	+700	2	105.5	108.4	.002390	6.4185E+06	.029616
12	+700	3	295.0	305.7	.002220	7.6971E+06	.023251
13	+700	4	579.3	597.4	.002540	6.9698E+06	.029226
14	+700	5	960.5	989.6	.002430	6.8575E+06	.028534
15	+700	6	1437.1	1480.2	.005270	6.8602E+06	.062252
16	+750	2	105.0	107.9	.002090	6.3489E+06	.025932
17	+750	3	293.7	304.1	.002040	7.5229E+06	.021640
18	+750	4	576.4	594.6	.001680	6.9485E+06	.019208
19	+750	5	956.0	985.2	.002490	6.8349E+06	.029076
20	+800	2	104.5	107.3	.002860	6.1780E+06	.036070
21	+800	3	292.4	302.5	.001970	7.3290E+06	.021226
22	+800	4	573.8	591.7	.001880	6.8226E+06	.021676
23	+800	5	951.7	979.9	.001750	6.6271E+06	.020848
24	+800	6	1423.5	1458.3	.009940	5.8773E+06	.133028
25	+850	2	104.1	106.6	.004750	5.7274E+06	.063791
26	+850	3	291.0	300.5	.004330	6.9623E+06	.048458
27	+850	4	571.1	587.9	.003740	6.4953E+06	.044718
28	+850	5	947.2	973.4	.004210	6.2718E+06	.052299
29	+900	2	103.4	105.4	.011770	4.8603E+06	.181856
30	+900	3	289.4	297.6	.009410	6.2438E+06	.115172
31	+900	4	568.5	584.3	.005990	6.1936E+06	.074193
32	+900	5	942.9	968.3	.006200	6.1065E+06	.078278

MATERIAL CODE: S23_36
MATERIAL: [illegible]AR S23_36
MANUFACTURER: [illegible]R TURBINES
REMARKS: [illegible]EST 1000 HRS/1000°F
DATE: 2 Feb 1987
ENTERED BY: HDW
BEAM MATERIAL: HAYNES #188
BEAM NUMBER: 01-42
BEAM TYPE: FREE LAYER BOTH SIDES
BEAM LEN[illegible]: 8.219 in
BEAM THICKNESS: .0372 in
BEAM DENSITY: .33 lb/cu in
DAMPING MATERIAL THICKNESS: .0023 in
DAMPING MATERIAL DENSITY: .0795 lb/cu in

INDEX No.	TEMP DEG F	MODE No.	BEAM FREQ Hz	COMPOSITE FREQ Hz	COMPOSITE LOSS FACTOR	YOUNG'S MODULUS PSI	MATERIAL LOSS FACTOR
33	+900	6	1410.2	1453.0	.010050	6.6602E+06	.117828
34	+950	2	103.0	102.9	.023230	1.8959E+06	.877509
35	+950	3	288.0	291.4	.021280	3.7702E+06	.413554
36	+950	4	565.4	572.4	.021310	3.8676E+06	.405644
37	+950	5	937.4	952.1	.001630	4.3741E+06	.027777
38	+950	6	1402.2	1442.0	.016850	6.2905E+06	.206009
39	+1000	2	102.5	100.5	.014220	0.0000E+00	0.000000
40	+1000	3	286.5	285.3	.016820	1.4568E+06	.810913
41	+1000	4	562.2	554.6	.019290	1.4731E+05	0.000000
42	+1000	5	932.0	925.3	.029720	1.0430E+06	2.006170
43	+1000	6	1394.7	1381.5	.012450	7.2584E+05	1.210788
44	+1050	2	101.9	98.9	.000753	0.0000E+00	0.000000
45	+1050	3	284.7	269.9	.005410	0.0000E+00	0.000000
46	+1050	4	559.0	547.4	.012420	0.0000E+00	0.000000
47	+1050	5	926.8	904.9	.015800	0.0000E+00	0.000000
48	+1050	6	1386.3	1354.7	.034550	0.0000E+00	0.000000
49	+1100	2	101.3	98.0	.004390	0.0000E+00	0.000000
50	+1100	3	283.1	267.4	.003700	0.0000E+00	0.000000
51	+1100	4	555.9	540.1	.006480	0.0000E+00	0.000000
52	+1100	5	921.5	894.7	.007330	0.0000E+00	0.000000
53	+1100	6	1378.5	1337.7	.010240	0.0000E+00	0.000000

U.S. GOVERNMENT PRINTING OFFICE: 1989-648-056